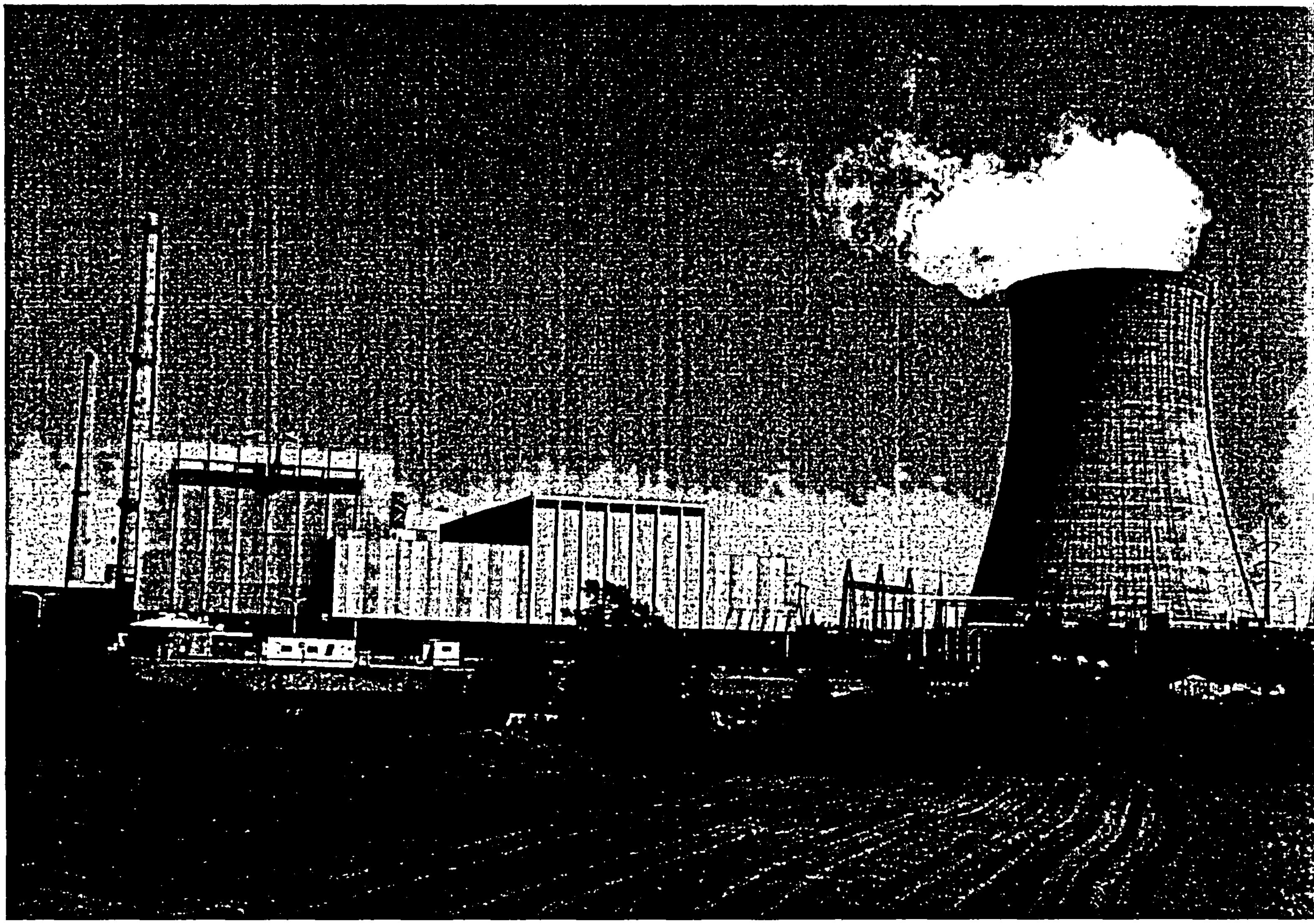
Constellation Energy



Nine Mile Point Nuclear Station

Amended License Renewal Application – July 2005

TABLE OF CONTENTS

1.0 ADMINISTRATIVE INFORMATION 1.0-1
1.1 PURPOSE AND GENERAL INFORMATION 1.0-1
1.1.1 Name of Applicant 1.0-1
1.1.2 Address of Applicant 1.0-1
1.1.3 Description of Business or Occupation of Applicant 1.0-2
1.1.4 Organization and Management of Applicant 1.0-2
1.1.5 Class and Period of License Sought 1.0-3
1.1.6 Alteration Schedule 1.0-3
1.1.7 Regulatory Agencies having Jurisdiction and Appropriate News Publications 1.0-4
1.1.8 Conforming Changes to the Standard Indemnity Agreement 1.0-4
1.1.9 Restricted Data Agreement 1.0-4
1.2 GENERAL LICENSE INFORMATION 1.0-5
1.2.1 Application Updates, Renewed Licenses, and Renewal Term Operation 1.0-5
1.2.2 Incorporation by Reference 1.0-5
1.2.3 Contact Information 1.0-5
1.3 DESCRIPTION OF NINE MILE POINT NUCLEAR STATION 1.0-5
1.4 APPLICATION STRUCTURE 1.0-6
1.5 ACRONYMS 1.0-9
2.0 SCOPING AND SCREENING METHODOLOGY FOR IDENTIFYING STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW, AND IMPLEMENTATION RESULTS 2.0-1
2.1 SCOPING AND SCREENING METHODOLOGY 2.1-1
2.1.1 Introduction 2.1-1
2.1.2 Plant Level Scoping 2.1-3
2.1.3 System Boundary and Commodity Groupings 2.1-3
2.1.4 Application of License Renewal Scoping Criterion 2.1-4
2.1.4.1 Safety-Related Criteria Pursuant to 10 CFR 54.4(a)(1) (Criterion 1) 2.1-5
2.1.4.2 Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2) (Criterion 2) 2.1-5
2.1.4.3 Regulated Event Scoping Pursuant to 10 CFR 54.4(a)(3) (Criterion 3) 2.1-11
2.1.5 Component Screening 2.1-13

2.1.5.1 Mechanical Systems 2.1-14
2.1.5.2 Civil Structures 2.1-15
2.1.5.3 Structural Commodity Groups 2.1-16
2.1.5.4 Electrical and Instrumentation & Control (I&C) Systems 2.1-16
2.1.5.5 Consumables 2.1-17
2.1.5.6 Conclusion 2.1-19
2.1.6 Interim Staff Guidance (ISG) Discussion 2.1-19
2.1.6.1 ISG-01 .... 2.1-21
2.1.6.2 ISG-02 .... 2.1-21
2.1.6.3 ISG-03 .... 2.1-21
2.1.6.4 ISG-04 .... 2.1-21
2.1.6.5 ISG-05I 2.1-22
2.1.6.6 ISG-06 .... 2.1-22
2.1.6.7 ISG-07 .... 2.1-22
2.1.6.8 ISG-08 .... 2.1-22
2.1.6.9 ISG-09 .... 2.1-23
2.1.6.10 ISG-10 .... 2.1-23
2.1.6.11 ISG-11 .... 2.1-23
2.1.6.12 ISG-12 .... 2.1-23
2.1.6.13 ISG-13 .... 2.1-23
2.1.6.14 ISG-14 .... 2.1-23
2.1.6.15 ISG-15 .... 2.1-24
2.1.6.16 ISG-16 .... 2.1-24
2.1.6.17 ISG-17 .... 2.1-24
2.1.6.18 ISG-18 .... 2.1-24
2.1.6.19 ISG-19A 2.1-24
2.1.6.20 ISG-19B 2.1-25
2.1.6.21 ISG-20 .... 2.1-25
2.1.6.22 ISG-21 .... 2.1-25
2.1.6.23 ISG-22 .... 2.1-25
2.1.6.24 ISG-23 .... 2.1-25
2.1.7 References 2.1-26
2.2 PLANT LEVEL SCOPING RESULTS 2.2-1
2.3 SCOPING AND SCREENING RESULTS: MECHANICAL SYSTEMS 2.3-1
2.3.1 Reactor Vessel, Internals, and Reactor Coolant Systems 2.3-1
2.3.1.A NMP1 Reactor Vessel, Internals, and Reactor Coolant Systems 2.3-1
2.3.1.A.1 NMP1 Reactor Pressure Vessel 2.3-1
2.3.1.A.2 NMP1 Reactor Pressure Vessel Internals 2.3-3
2.3.1.A.3 NMP1 Reactor Pressure Vessel Instrumentation System 2.3-5
2.3.1.A.4 NMP1 Reactor Recirculation System 2.3-8
2.3.1.A.5 NMP1 Control Rod Drive System 2.3-10

2.3.1.A.6 NMP1 Reactor Coolant Pressure Boundary Components in Other Systems 2.3-13
2.3.1.B NMP2 Reactor Vessel, Internals, and Reactor Coolant Systems 2.3-14
2.3.1.B.1 NMP2 Reactor Pressure Vessel 2.3-14
2.3.1.B.2 NMP2 Reactor Pressure Vessel Internals 2.3-16
2.3.1.B.3 NMP2 Reactor Pressure Vessel Instrumentation System 2.3-18
2.3.1.B.4 NMP2 Reactor Recirculation System 2.3-20
2.3.1.B.5 NMP2 Control Rod Drive System 2.3-22
2.3.1.B.6 NMP2 Reactor Coolant Pressure Boundary Components in Other Systems 2.3-24
2.3.2 Engineered Safety Features Systems 2.3-26
2.3.2.A NMP1 Engineered Safety Features Systems 2.3-26
2.3.2.A.1 NMP1 Automatic Depressurization System 2.3-27
2.3.2.A.2 NMP1 Containment Spray System 2.3-28
2.3.2.A.3 NMP1 Core Spray System 2.3-30
2.3.2.A.4 NMP1 Emergency Cooling System 2.3-32
2.3.2.B NMP2 Engineered Safety Features Systems 2.3-33
2.3.2.B.1 NMP2 Automatic Depressurization System 2.3-34
2.3.2.B.2 NMP2 Hydrogen Recombiner System 2.3-35
2.3.2.B.3 NMP2 High Pressure Core Spray System 2.3-37
2.3.2.B.4 NMP2 Low Pressure Core Spray System 2.3-38
2.3.2.B.5 NMP2 Primary Containment Isolation System 2.3-40
2.3.2.B.6 NMP2 Reactor Core Isolation Cooling System 2.3-41
2.3.2.B.7 NMP2 Residual Heat Removal System 2.3-43
2.3.2.B.8 NMP2 Standby Gas Treatment System 2.3-46
2.3.3 Auxiliary Systems 2.3-49
2.3.3.A NMP1 Auxiliary Systems 2.3-49
2.3.3.A.1 NMP1 Administration Building Heating, Ventilation, and Air Conditioning (HVAC) System 2.3-50
2.3.3.A.2 NMP1 Circulating Water System 2.3-51
2.3.3.A.3 NMP1 City Water System 2.3-53
2.3.3.A.4 NMP1 Compressed Air System 2.3-55
2.3.3.A.5 NMP1 Containment System 2.3-62
2.3.3.A.6 NMP1 Control Room HVAC System 2.3-66
2.3.3.A.7 NMP1 Diesel Generator Building Ventilation System 2.3-69
2.3.3.A.8 NMP1 Emergency Diesel Generator System 2.3-70
2.3.3.A.9 NMP1 Fire Detection And Protection System 2.3-73
2.3.3.A.10 NMP1 Hydrogen Water Chemistry System 2.3-77
2.3.3.A.11 NMP1 Liquid Poison System 2.3-78

2.3.3.A.12 NMP1 Miscellaneous Non-Contaminated Vents and Drains System 2.3-80
2.3.3.A.13 NMP1 Neutron Monitoring System 2.3-81
2.3.3.A.14 NMP1 Process Radiation Monitoring System 2.3-83
2.3.3.A.15 NMP1 Radioactive Waste Disposal Building HVAC System 2.3-84
2.3.3.A.16 NMP1 Radioactive Waste System 2.3-85
2.3.3.A.17 NMP1 Reactor Building Closed Loop Cooling Water System 2.3-90
2.3.3.A.18 NMP1 Reactor Building HVAC System 2.3-94
2.3.3.A.19 NMP1 Reactor Water Cleanup System 2.3-96
2.3.3.A.20 NMP1 Sampling System 2.3-98
2.3.3.A.21 NMP1 Service Water System 2.3-100
2.3.3.A.22 NMP1 Shutdown Cooling System 2.3-103
2.3.3.A.23 NMP1 Spent Fuel Pool Filtering And Cooling System 2.3-105
2.3.3.A.24 NMP1 Technical Support Center HVAC System 2.3-107
2.3.3.A.25 NMP1 Turbine Building Closed Loop Cooling Water System 2.3-108
2.3.3.A.26 NMP1 Turbine Building HVAC System 2.3-110
2.3.3.A.27 NMP1 Electric Steam Boiler System 2.3-111
2.3.3.A.28 NMP1 Makeup Demineralizer System 2.3-113

2.3.3.B NMP2 Auxiliary Systems 2.3-115
2.3.3.B.1 NMP2 Air Startup Standby Diesel Generator System 2.3-117
2.3.3.B.2 NMP2 Alternate Decay Heat Removal System 2.3-119
2.3.3.B.3 NMP2 Auxiliary Service Building HVAC System 2.3-121
2.3.3.B.4 NMP2 Chilled Water Ventilation System (REMOVED) 2.3-122
2.3.3.B.5 NMP2 Compressed Air System 2.3-122
2.3.3.B.6 NMP2 Containment Atmosphere Monitoring System 2.3-127
2.3.3.B.7 NMP2 Containment Leakage Monitoring System 2.3-129
2.3.3.B.8 NMP2 Control Building Chilled Water System 2.3-130
2.3.3.B.9 NMP2 Control Building HVAC System 2.3-132
2.3.3.B.10 NMP2 Diesel Generator Building Ventilation System 2.3-134
2.3.3.B.11 NMP2 Domestic Water System 2.3-136
2.3.3.B.12 NMP2 Engine-Driven Fire Pump Fuel Oil System 2.3-137
2.3.3.B.13 NMP2 Fire Detection and Protection System 2.3-138
2.3.3.B.14 NMP2 Floor and Equipment Drains System 2.3-143
2.3.3.B.15 NMP2 Generator Standby Lube Oil System 2.3-146
2.3.3.B.16 NMP2 Glycol Heating System (REMOVED) 2.3-148
2.3.3.B.17 NMP2 Hot Water Heating System 2.3-149
2.3.3.B.18 NMP2 Makeup Water System 2.3-150

2.3.3.B.19 NMP2 Neutron Monitoring System 2.3-152
2.3.3.B.20 NMP2 Primary Containment Purge System....2.3-154
2.3.3.B.21 NMP2 Process Sampling System....2.3-155
2.3.3.B.22 NMP2 Radiation Monitoring System....2.3-157
2.3.3.B.23 NMP2 Reactor Building Closed Loop Cooling Water System....2.3-160
2.3.3.B.24 NMP2 Reactor Building HVAC System....2.3-163
2.3.3.B.25 NMP2 Reactor Water Cleanup System....2.3-165
2.3.3.B.26 NMP2 Seal Water System (REMOVED)....2.3-167
2.3.3.B.27 NMP2 Service Water System....2.3-168
2.3.3.B.28 NMP2 Spent Fuel Pool Cooling and Cleanup System...2.3-170
2.3.3.B.29 NMP2 Standby Diesel Generator Fuel Oil System 2.3-173
2.3.3.B.30 NMP2 Standby Diesel Generator Protection (Generator) System....2.3-175
2.3.3.B.31 NMP2 Standby Liquid Control System....2.3-177
2.3.3.B.32 NMP2 Yard Structures Ventilation System 2.3-179
2.3.3.B.33 NMP2 Auxiliary Boiler System 2.3-180
2.3.3.B.34 NMP2 Circulating Water System....2.3-182
2.3.3.B.35 NMP2 Makeup Water Treatment System 2.3-184
2.3.3.B.36 NMP2 Radioactive Liquid Waste Management System.2.3-185
2.3.3.B.37 NMP2 Roof Drainage System....2.3-187
2.3.3.B.38 NMP2 Sanitary Drains and Disposal System....2.3-188
2.3.3.B.39 NMP2 Service Water Chemical Treatment System 2.3-189
2.3.3.B.40 NMP2 Turbine Building Closed Loop Cooling Water System....2.3-191
2.3.4 Steam and Power Conversion Systems....2.3-193
2.3.4.A NMP1 Steam and Power Conversion Systems....2.3-193
2.3.4.A.1 NMP1 Condensate and Condensate Transfer System..2.3-193
2.3.4.A.2 NMP1 Condenser Air Removal and Off-Gas System 2.3-197
2.3.4.A.3 NMP1 Feedwater/High Pressure Coolant Injection System....2.3-198
2.3.4.A.4 NMP1 Main Generator and Auxiliary System....2.3-201
2.3.4.A.5 NMP1 Main Steam System....2.3-203
2.3.4.A.6 NMP1 Main Turbine and Auxiliary Systems....2.3-205
2.3.4.A.7 NMP1 Moisture Separator Reheater Steam System 2.3-207
2.3.4.B NMP2 Steam and Power Conversion Systems....2.3-208
2.3.4.B.1 NMP2 Main Condenser Air Removal System 2.3-209
2.3.4.B.2 NMP2 Condensate System....2.3-210
2.3.4.B.3 NMP2 Feedwater System 2.3-213
2.3.4.B.4 NMP2 Main Steam System....2.3-216
2.3.4.B.5 NMP2 Moisture Separator and Reheater System....2.3-218
2.3.4.B.6 NMP2 Extraction Steam and Feedwater Heater Drain System....2.3-220

2.3.4.B.7 NMP2 Turbine Main System 2.3-223

2.4 SCOPING AND SCREENING RESULTS: STRUCTURES AND COMPONENT SUPPORTS 2.4-1

2.4.A NMP1 STRUCTURES 2.4-1
2.4.A.1 NMP1 Primary Containment Structure 2.4-2
2.4.A.2 NMP1 Reactor Building 2.4-5
2.4.A.3 NMP1 Essential Yard Structures 2.4-8
2.4.A.4 NMP1 Fuel Handling System 2.4-10
2.4.A.5 NMP1 Material Handling System 2.4-11
2.4.A.6 NMP1 Offgas Building 2.4-12
2.4.A.7 NMP1 Personnel/Equipment Access System 2.4-14
2.4.A.8 NMP1 Radwaste Solidification and Storage Building 2.4-15
2.4.A.9 NMP1 Screen and Pump House Building 2.4-17
2.4.A.10 NMP1 Turbine Building 2.4-19
2.4.A.11 NMP1 Vent Stack 2.4-21
2.4.A.12 NMP1 Waste Disposal Building 2.4-22

2.4.B NMP2 STRUCTURES 2.4-24
2.4.B.1 NMP2 Primary Containment Structure 2.4-25
2.4.B.2 NMP2 Reactor Building 2.4-28
2.4.B.3 NMP2 Auxiliary Service Building 2.4-32
2.4.B.4 NMP2 Control Room Building 2.4-34
2.4.B.5 NMP2 Diesel Generator Bulding 2.4-36
2.4.B.6 NMP2 Essential Yard Structures 2.4-38
2.4.B.7 NMP2 Fuel Handling System 2.4-40
2.4.B.8 NMP2 Main Stack 2.4-42
2.4.B.9 NMP2 Material Handling System 2.4-43
2.4.B.10 NMP2 Motor Operated Doors System 2.4-44
2.4.B.11 NMP2 Radwaste Building 2.4-45
2.4.B.12 NMP2 Screenwell Building 2.4-47
2.4.B.13 NMP2 Standby Gas Treatment Building 2.4-50
2.4.B.14 NMP2 Turbine Building 2.4-52

2.4.C NMPNS STRUCTURAL COMMODITIES 2.4-54
2.4.C.1 Component Supports 2.4-54
2.4.C.2 Fire Stops and Seals 2.4-57

2.5 SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS 2.5-1

2.5.A NMP1 ELECTRICAL AND I&C SYSTEMS 2.5-1
2.5.A.1 NMP1 24V DC Electrical Distribution System 2.5-3

2.5.A.2 NMP1 125V DC Electrical Distribution System 2.5-3
2.5.A.3 NMP1 120V AC Electrical Distribution System....................2.5-4
2.5.A.4 NMP1 600V AC Electrical Distribution System....................2.5-5
2.5.A.5 NMP1 4.16KV AC Electrical Distribution System 2.5-5
2.5.A.6 NMP1 115KV AC Electrical Distribution System 2.5-6
2.5.A.7 NMP1 Anticipated Transients Without Scram System 2.5-7
2.5.A.8 NMP1 Communications System....................2.5-8
2.5.A.9 NMP1 Plant Lighting System....................2.5-9
2.5.A.10 NMP1 Plant Process Computer System....................2.5-10
2.5.A.11 NMP1 Reactor Protection System....................2.5-11
2.5.A.12 NMP1 Remote Shutdown System....................2.5-12

2.5.B NMP2 ELECTRICAL AND I&C SYSTEMS 2.5-13
2.5.B.1 NMP2 13.8KV AC Electrical Distribution System 2.5-15
2.5.B.2 NMP2 4.16KV AC Electrical Distribution System 2.5-16
2.5.B.3 NMP2 Battery-24V-Station System 2.5-17
2.5.B.4 NMP2 Common Electrical System 2.5-18
2.5.B.5 NMP2 Communications Paging System....................2.5-19
2.5.B.6 NMP2 Communications Telephone System....................2.5-19
2.5.B.7 NMP2 Emergency DC Distribution System 2.5-20
2.5.B.8 NMP2 Emergency Uninterruptible Power Supplies (UPS) System 2.5-21
2.5.B.9 NMP2 Feedwater Control System....................2.5-22
2.5.B.10 NMP2 Heat Tracing System....................2.5-23
2.5.B.11 NMP2 Information Handling Annunciator System 2.5-24
2.5.B.12 NMP2 Motor Control Center Emergency System....................2.5-24
2.5.B.13 NMP2 Normal AC High Voltage Distribution System 2.5-25
2.5.B.14 NMP2 Normal DC Distribution System....................2.5-26
2.5.B.15 NMP2 Normal UPS System....................2.5-27
2.5.B.16 NMP2 Process Computer System....................2.5-28
2.5.B.17 NMP2 Reactor Protection Motor Generator System 2.5-29
2.5.B.18 NMP2 Reactor Protection System....................2.5-30
2.5.B.19 NMP2 Redundant Reactivity Control System....................2.5-31
2.5.B.20 NMP2 Remote Shutdown System 2.5-32
2.5.B.21 NMP2 Reserve Station Service Transformers System....................2.5-32
2.5.B.22 NMP2 Standby and Emergency AC Distribution System 2.5-33
2.5.B.23 NMP2 Standby Diesel Generator Protection (Breaker) System 2.5-34
2.5.B.24 NMP2 Startup Transient Analysis System....................2.5-35
2.5.B.25 NMP2 Station Control Bus Nonvital AC Supply System....................2.5-36
2.5.B.26 NMP2 Station Control Bus Nonvital Indication System 2.5-36
2.5.B.27 NMP2 Station Control Bus Vital AC Supply System....................2.5-37
2.5.B.28 NMP2 Station Lighting System....................2.5-38

2.5.B.29 NMP2 Switchyard System 2.5-40
2.5.B.30 NMP2 Synchronizing – Diesel Generator System 2.5-42
2.5.B.31 NMP2 Unit Substation Emergency AC Controls and Heater Supply System 2.5-43
2.5.B.32 NMP2 Unit Substation Emergency System 2.5-44
2.5.B.33 NMP2 Unit Substation System 2.5-45
2.5.B.34 NMP2 UPS Distribution System 2.5-45

2.5.C NMPNS ELECTRICAL COMMODITIES 2.5-46
2.5.C.1 Cables and Connectors 2.5-47
2.5.C.2 Non-Segregated/Switchyard Bus 2.5-48
2.5.C.3 Containment Electrical Penetrations 2.5-49
2.5.C.4 Switchyard Components 2.5-49

3.0 AGING MANAGEMENT REVIEW RESULTS

4.0 TIME-LIMITED AGING ANALYSES

LIST OF APPENDICES

Appendix A	Safety Analysis Report Supplement
Appendix B	Aging Management Programs and Activities
Appendix C	Commodity Groups (Optional)
Appendix D	Technical Specification Change
Appendix E	Environmental Report

LIST OF TABLES

Table 2.0-1 Intended Functions Abbreviations & Definitions 2.0-1

Table 2.2-1 NMP1 Plant Level Scoping Results 2.2-2

Table 2.2-2 NMP2 Plant Level Scoping Results 2.2-9

Table 2.3.1.A.1-1 NMP1 Reactor Pressure Vessel 2.3-3

Table 2.3.1.A.2-1 NMP1 Reactor Pressure Vessel Internals 2.3-5

Table 2.3.1.A.3-1 NMP1 Reactor Pressure Vessel Instrumentation System 2.3-8

Table 2.3.1.A.4-1 NMP1 Reactor Recirculation System 2.3-10

Table 2.3.1.A.5-1 NMP1 Control Rod Drive System 2.3-13

Table 2.3.1.A.6-1 NMP1 Application Sections Where Additional Reactor Coolant Pressure Boundary Components Are Evaluated 2.3-14

Table 2.3.1.B.1-1 NMP2 Reactor Pressure Vessel 2.3-16

Table 2.3.1.B.2-1 NMP2 Reactor Pressure Vessel Internals 2.3-18

Table 2.3.1.B.3-1 NMP2 Reactor Pressure Vessel Instrumentation System 2.3-20

Table 2.3.1.B.4-1 NMP2 Reactor Recirculation System 2.3-22

Table 2.3.1.B.5-1 NMP2 Control Rod Drive System 2.3-25

Table 2.3.1.B.6-1 NMP2 Application Sections Where Additional Reactor Coolant Pressure Boundary Components Are Evaluated 2.3-26

Table 2.3.2.A.2-1 NMP1 Containment Spray System 2.3-30

Table 2.3.2.A.3-1 NMP1 Core Spray System 2.3-32

Table 2.3.2.A.4-1 NMP1 Emergency Cooling System 2.3-34

Table 2.3.2.B.2-1 NMP2 Hydrogen Recombiner System 2.3-37

Table 2.3.2.B.3-1 NMP2 High Pressure Core Spray System 2.3-39

Table 2.3.2.B.4-1 NMP2 Low Pressure Core Spray System 2.3-41

Table 2.3.2.B.6-1 NMP2 Reactor Core Isolation Cooling System 2.3-44

Table 2.3.2.B.7-1 NMP2 Residual Heat Removal System 2.3-47

Table 2.3.2.B.8-1 NMP2 Standby Gas Treatment System 2.3-49

Table 2.3.3.A.2-1 NMP1 Circulating Water System 2.3-54

Table 2.3.3.A.3-1 NMP1 City Water System 2.3-56

Table 2.3.3.A.4-1 NMP1 Compressed Air Systems 2.3-62

Table 2.3.3.A.5-1 NMP1 Containment Systems 2.3-67

Table 2.3.3.A.6-1 NMP1 Control Room HVAC System 2.3-70

Table 2.3.3.A.7-1 NMP1 Diesel Generator Building Ventilation System 2.3-71

Table 2.3.3.A.8-1 NMP1 Emergency Diesel Generator System 2.3-74

Table 2.3.3.A.9-1 NMP1 Fire Detection and Protection System 2.3-78

Table 2.3.3.A.10-1 NMP1 Hydrogen Water Chemistry System 2.3-80

Table 2.3.3.A.11-1 NMP1 Liquid Poison System 2.3-82

Table 2.3.3.A.12-1 NMP1 Miscellaneous Non-Contaminated Vents and Drains System 2.3-83

Table 2.3.3.A.13-1 NMP1 Neutron Monitoring System 2.3-85

Table 2.3.3.A.15-1 NMP1 Radioactive Waste Disposal Building HVAC System 2.3-87

Table 2.3.3.A.16-1 NMP1 Radioactive Waste System 2.3-92

Table 2.3.3.A.17-1 NMP1 Reactor Building Closed Loop Cooling Water System 2.3-96

Table 2.3.3.A.18-1 NMP1 Reactor Building HVAC System 2.3-98

Table 2.3.3.A.19-1 NMP1 Reactor Water Cleanup System 2.3-100

Table 2.3.3.A.20-1 NMP1 Sampling System 2.3-102

Table 2.3.3.A.21-1 NMP1 Service Water System 2.3-105

Table 2.3.3.A.22-1 NMP1 Shutdown Cooling System 2.3-107

Table 2.3.3.A.23-1 NMP1 Spent Fuel Pool Filtering and Cooling System 2.3-109

Table 2.3.3.A.25-1 NMP1 Turbine Building Closed Loop Cooling Water System 2.3-112

Table 2.3.3.A.26-1 NMP1 Turbine Building HVAC System 2.3-114

Table 2.3.3.A.27-1 NMP1 Electric Steam Boiler System 2.3-116

Table 2.3.3.A.28-1	NMP1 Makeup Demineralizer System	2.3-117
Table 2.3.3.B.1-1	NMP2 Air Startup-Standby Diesel Generator System	2.3-122
Table 2.3.3.B.2-1	NMP2 Alternate Decay Heat Removal System	2.3-124
Table 2.3.3.B.3-1	NMP2 Auxiliary Service Building HVAC System	2.3-125
Table 2.3.3.B.4-1	NMP2 Chilled Water Ventilation System (REMOVED)	
Table 2.3.3.B.5-1	NMP2 Compressed Air Systems	2.3-131
Table 2.3.3.B.6-1	NMP2 Containment Atmosphere Monitoring System	2.3-133
Table 2.3.3.B.7-1	NMP2 Containment Leakage Monitoring System	2.3-134
Table 2.3.3.B.8-1	NMP2 Control Building Chilled Water System	2.3-136
Table 2.3.3.B.9-1	NMP2 Control Building HVAC System	2.3-138
Table 2.3.3.B.10-1	NMP2 Diesel Generator Building Ventilation System	2.3-140
Table 2.3.3.B.11-1	NMP2 Domestic Water System	2.3-142
Table 2.3.3.B.12-1	NMP2 Engine-Driven Fire Pump Fuel Oil System	2.3-143
Table 2.3.3.B.13-1	NMP2 Fire Detection and Protection System	2.3-147
Table 2.3.3.B.14-1	NMP2 Floor and Equipment Drains System	2.3-152
Table 2.3.3.B.15-1	NMP2 Generator Standby Lube Oil System	2.3-154
Table 2.3.3.B.16-1	NMP2 Glycol Heating System (REMOVED)	
Table 2.3.3.B.17-1	NMP2 Hot Water Heating System	2.3-157
Table 2.3.3.B.18-1	NMP2 Makeup Water System	2.3-159
Table 2.3.3.B.19-1	NMP2 Neutron Monitoring System	2.3-161
Table 2.3.3.B.20-1	NMP2 Primary Containment Purge System	2.3-163
Table 2.3.3.B.21-1	NMP2 Process Sampling System	2.3-165
Table 2.3.3.B.22-1	NMP2 Radiation Monitoring System	2.3-167
Table 2.3.3.B.23-1	NMP2 Reactor Building Closed Loop Cooling Water System	2.3-170
Table 2.3.3.B.24-1	NMP2 Reactor Building HVAC System	2.3-173

Table 2.3.3.B.25-1 NMP2 Reactor Water Cleanup System 2.3-175

Table 2.3.3.B.26-1 NMP2 Seal Water System (REMOVED) ....

Table 2.3.3.B.27-1 NMP2 Service Water System 2.3-180

Table 2.3.3.B.28-1 N MP2 Spent Fuel Pool Cooling and Cleanup System....................2.3-182

Table 2.3.3.B.29-1 NMP2 Standby Diesel Generator Fuel Oil System....................2.3-185

Table 2.3.3.B.30-1 NMP2 Standby Diesel Generator Protection (Generator) System...2.3-186

Table 2.3.3.B.31-1 NMP2 Standby Liquid Control System 2.3-188

Table 2.3.3.B.32-1 NMP2 Yard Structures Ventilation System....................2.3-190

Table 2.3.3.B.33-1 NMP2 Ausiliary Boiler System....................2.3-192

Table 2.3.3.B.34-1 NMP2 Circulating Water System 2.3-193

Table 2.3.3.B.35-1 NMP2 Makeup Water Treatment System....................2.3-195

Table 2.3.3.B.36-1 NMP2 Radioactive Liquid Waste Management System 2.3-197

Table 2.3.3.B.37-1 NMP2 Roof Drainage System....................2.3-198

Table 2.3.3.B.38-1 NMP2 Sanitary Drains and Disposal System 2.3-199

Table 2.3.3.B.39-1 NMP2 Service Water Chemical Treatment System....................2.3-200

Table 2.3.3.B.40-1 NMP2 Turbine Building Closed Loop Cooling Water System....................2.3-202

Table 2.3.4.A.1-1 NMP1 Condensate and Condensate Transfer System....................2.3-206

Table 2.3.4.A.2-1 NMP1 Condenser Air Removal and Off-Gas System....................2.3-208

Table 2.3.4.A.3-1 NMP1 Feedwater/High Pressure Coolant Injection System 2.3-211

Table 2.3.4.A.4-1 NMP1 Main Generator and Auxiliary System 2.3-213

Table 2.3.4.A.5-1 NMP1 Main Steam System....................2.3-215

Table 2.3.4.A.6-1 NMP1 Main Turbine and Auxiliary System 2.3-218

Table 2.3.4.A.7-1 NMP1 Moisture Separator Reheater Steam System....................2.3-219

Table 2.3.4.B.1-1 NMP2 Main Condenser Air Removal System....................2.3-221

Table 2.3.4.B.2-1 NMP2 Condensate System 2.3-224

Table 2.3.4.B.3-1	NMP2 Feedwater System	2.3-226
Table 2.3.4.B.4-1	NMP2 Main Steam System	2.3-229
Table 2.3.4.B.5-1	NMP2 Moisture Separator and Reheater System	2.3-231
Table 2.3.4.B.6-1	NMP2 Extraction Steam and Feedwater Heater Drain System	2.3-234
Table 2.3.4.B.7-1	NMP2 Main Turbine System	2.3-236
Table 2.4.A.1-1	NMP1 Primary Containment Structure	2.4-3
Table 2.4.A.2-1	NMP1 Reactor Building	2.4-8
Table 2.4.A.3-1	NMP1 Essential Yard Structures	2.4-14
Table 2.4.A.4-1	NMP1 Fuel Handling System	2.4-16
Table 2.4.A.5-1	NMP1 Material Handling System	2.4-18
Table 2.4.A.6-1	NMP1 Offgas Building	2.4-19
Table 2.4.A.8-1	NMP1 Radwaste Solidification and Storage Building	2.4-22
Table 2.4.A.9-1	NMP1 Screen and Pump House Building	2.4-25
Table 2.4.A.10-1	NMP1 Turbine Building	2.4-28
Table 2.4.A.11-1	NMP1 Vent Stack	2.4-33
Table 2.4.A.12-1	NMP1 Waste Disposal Building	2.4-35
Table 2.4.B.1-1	NMP2 Primary Containment Structure	2.4-38
Table 2.4.B.2-1	NMP2 Reactor Building	2.4-46
Table 2.4.B.3-1	NMP2 Auxiliary Service Building	2.4-54
Table 2.4.B.4-1	NMP2 Control Room Building	2.4-56
Table 2.4.B.5-1	NMP2 Diesel Generator Building	2.4-60
Table 2.4.B.6-1	NMP2 Essential Yard Structures	2.4-64
Table 2.4.B.7-1	NMP2 Fuel Handling System	2.4-69
Table 2.4.B.8-1	NMP2 Main Stack	2.4-71
Table 2.4.B.9-1	NMP2 Material Handling System	2.4-73

Table 2.4.B.11-1	NMP2 Radwaste Building	2.4-75
Table 2.4.B.12-1	NMP2 Screenwell Building	2.4-79
Table 2.4.B.13-1	NMP2 Standby Gas Treatment Building	2.4-85
Table 2.4.B.14-1	NMP2 Turbine Building	2.4-89
Table 2.4.C.1-1	Component Supports	2.4-94
Table 2.4.C.2-1	Fire Stops and Seals	2.4-98
Table 2.5.C.1-1	Cables and Connectors	2.5-48
Table 2.5.C.2-1	Non-Segregated/Switchyard Bus	2.5-49
Table 2.5.C.3-1	Containment Electrical Penetrations	2.5-50
Table 2.5.C.4-1	Switchyard Components	2.5-51

1.0 ADMINISTRATIVE INFORMATION

1.1 PURPOSE AND GENERAL INFORMATION

Pursuant to Part 54 of Title 10 of the Code of Federal Regulations (10 CFR 54), this application seeks renewal for an additional 20 year term of the facility operating licenses for Nine Mile Point (NMP) Nuclear Station Unit 1 (DPR-63) and Unit 2 (NPF-69). The NMP Unit 1 (NMP1) operating license currently expires at midnight, August 22, 2009. The NMP Unit 2 (NMP2) operating license currently expires at midnight, October 31, 2026. Since Nine Mile Point Nuclear Station, LLC (NMPNS) is submitting this application prior to 20 years before the expiration of the operating license for NMP2, NMPNS submitted to the U.S. Nuclear Regulatory Commission (NRC) a request for exemption[1] from the schedular requirements of 10 CFR 54.17(c), along with a supplemental letter[2]. The NRC approved this request on October 8, 2002[3].

Following is the general information required by 10 CFR 54.17 and 10 CFR 54.19.

1.1.1 NAME OF APPLICANT

Nine Mile Point Nuclear Station, LLC

1.1.2 ADDRESS OF APPLICANT

Nine Mile Point Nuclear Station, LLC
1997 Annapolis Exchange Parkway
Annapolis, MD 21401

Address of Nine Mile Point Nuclear Station

Nine Mile Point Nuclear Station
P.O. Box 63
Lycoming, NY 13093

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[1] Letter from NMPNS to the NRC, letter number NMP2L 2042, dated January 4, 2002, *Request for Exemption from the Requirements of 10 CFR §54.17(c), TAC No. MB3532.*
[2] Letter from NMPNS to the NRC, letter number NMP2L 2063, dated June 27, 2002, *Request for Exemption from the Requirements of 10 CFR §54.17(c), TAC No. MB3532, Response to Request for Additional Information.*
[3] Letter from the NRC to NMPNS, P.S. Tam to J.T. Conway, dated October 8, 2002, *Nine Mile Point Nuclear Station, Unit No. 2 – Schedular Exemption from the Requirements of 10 CFR Part 54, Section 54.17(c) (TAC No. MB3532).*

1.1.3 DESCRIPTION OF BUSINESS OR OCCUPATION OF APPLICANT

NMPNS is an indirect subsidiary of Constellation Generation Group, LLC (CGG), which is a member of the Constellation Energy Group, LLC (CEG).

On November 7, 2001, CEG completed its purchase of the NMPNS. CEG owns 100 percent of NMP1 and 82 percent of NMP2. The Long Island Power Authority owns the remaining 18 percent of NMP2. NMPNS is the exclusive operator and the holder of record for the operating licenses for both units.

NMPNS is engaged in the generation and sale of electric energy to wholesale customers. All revenue for operating expenses and routine improvements and additions is acquired through the sale of electricity and related services.

1.1.4 ORGANIZATION AND MANAGEMENT OF APPLICANT

NMPNS is a limited liability company organized under the laws of the State of Delaware with its principal office located in Annapolis, MD at the address stated in Section 1.1.2. Neither NMPNS, nor its parent entities, are owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. NMPNS makes this application on its own behalf.

The names and business addresses of NMPNS's directors and principal officers are listed below. All persons listed are U.S. citizens.

Directors	**Addresses**
Michael J. Wallace	Nine Mile Point Nuclear Station, LLC 1997 Annapolis Exchange Parkway Annapolis, MD 21401
J. Michael Heffley, Sr.	Nine Mile Point Nuclear Station, LLC 1997 Annapolis Exchange Parkway Annapolis, MD 21401
James A. Spina	Nine Mile Point Nuclear Station, LLC P.O. Box 63 Lycoming, NY 13093

Principal Officers	**Addresses**
Michael J. Wallace Chairman of the Board and President	Nine Mile Point Nuclear Station, LLC 1997 Annapolis Exchange Parkway Annapolis, MD 21401

Principal Officers	Addresses
James A. Spina Vice President	Nine Mile Point Nuclear Station, LLC P.O. Box 63 Lycoming, NY 13093
Steven L. Miller, Esq. Secretary	Constellation Generation Group,LLC 750 E. Pratt Street, 17th Floor Baltimore, MD 21202
Stephen A. Mormann Treasurer	Nine Mile Point Nuclear Station, LLC 1997 Annapolis Exchange Parkway Annapolis, MD 21401
Carey W. Fleming, Esq. Assistant Secretary	Constellation Generation Group,.LLC 750 E. Pratt Street, 17th Floor Baltimore, MD 21202

1.1.5 CLASS AND PERIOD OF LICENSE SOUGHT

NMPNS requests renewal of the Class 104b operating license for NMP1 and the Class 103 operating license for NMP2 (license numbers DPR-63 and NPF-69, respectively) for an additional 20 year term of the facility operating license period. License renewal would extend the NMP1 facility operating license from midnight August 22, 2009 to midnight August 22, 2029 and would extend the NMP2 facility operating license from midnight October 31, 2026 to midnight October 31, 2046[4]. This application includes a request for renewal of those NRC source material, special nuclear material, and byproduct material licenses that are currently subsumed into or combined with the current operating licenses. The facility will continue to be known as the NMPNS and will continue to generate electric power during the renewal period.

1.1.6 ALTERATION SCHEDULE

NMPNS does not propose to construct or alter any production or utilization facility in connection with this renewal application.

[4] NMPNS realizes that this date may need to be adjusted, based on the provision in 10 CFR §54.31(b) that *The term of any renewed license may not exceed 40 years.*

1.1.7 REGULATORY AGENCIES HAVING JURISDICTION AND APPROPRIATE NEWS PUBLICATIONS

The Federal Energy Regulatory Commission has jurisdiction over the wholesale sales of energy and capacity by NMPNS. The New York State Public Service Commission also has jurisdiction over NMPNS.

The addresses of the agencies cited are:

Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

New York State Public Service Commission
Empire State Plaza
Agency Building 3
Albany, NY 12223-1350

The area news publications that circulate in the area around NMPNS and that are considered appropriate to give reasonable notice of the application are:

Palladium Times
140 West First Street
Oswego, NY 13126

The Post Standard
Clinton Square
P.O. Box 4915
Syracuse, NY 13221-4915

1.1.8 CONFORMING CHANGES TO THE STANDARD INDEMNITY AGREEMENT

The requirements at 10 CFR 54.19(b) state that license renewal applications include, "...conforming changes to the standard indemnity agreement, 10 CFR 140.92, Appendix B, to account for the expiration term of the proposed renewed license." The current indemnity agreement for NMPNS does not contain a specific expiration term for the operating licenses. Therefore, conforming changes to account for the expiration term of the proposed renewed licenses are not necessary, unless the license number is changed upon issuance of the renewed licenses.

1.1.9 RESTRICTED DATA AGREEMENT

With regard to the requirements of 10 CFR 54.17(f), this application does not contain any "Restricted Data," as that term is defined in the Atomic Energy

Act of 1954, as amended, or other defense information, and it is not expected that any such information will become involved in these licensed activities.

In accordance with the requirements of 10 CFR 54.17(g), NMPNS will not permit any individual to have access to, or any facility to possess restricted data or classified national security information until the individual and/or facility has been approved for such access under the provisions of 10 CFR Parts 25 and/or 95.

1.2 GENERAL LICENSE INFORMATION

1.2.1 APPLICATION UPDATES, RENEWED LICENSES, AND RENEWAL TERM OPERATION

In accordance with 10 CFR 54.21(b), during NRC review of this application, an annual update to the application to reflect any change to the current licensing basis that materially affects the contents of the license renewal application will be provided.

1.2.2 INCORPORATION BY REFERENCE

There are no documents incorporated by reference as part of the application. Any document references are listed for information only.

1.2.3 CONTACT INFORMATION

Any notices, questions, or correspondence in connection with this filing should be directed to:

James A. Spina Vice President	Nine Mile Point Nuclear Station, LLC P.O. Box 63 Lycoming, NY 13093
With copies to: Carey W. Fleming, Esq. Assistant Secretary	 Constellation Generation Group, LLC 750 E. Pratt Street, 17th Floor Baltimore, MD 21202

1.3 DESCRIPTION OF NINE MILE POINT NUCLEAR STATION

The NMPNS consists of two nuclear plants, on approximately 900 acres along the shore of Lake Ontario, Oswego County, NY, approximately 5 miles north-northeast of the nearest boundary of the city of Oswego. Both Nine Mile Point reactors are General Electric designed Boiling Water Reactors

(BWRs). The licensed thermal capacity for NMP1 is 1850 MWt and for NMP2 it is 3467 MWt. The steam and power conversion system, including its turbine generator, is designed to permit generation of a net electrical output of approximately 615 MWe for NMP1 and 1144 MWe for NMP2. Descriptions of the NMPNS systems and structures can be found in the USAR[5]. Additional descriptive information about the NMPNS systems, structures, and components is also provided in Section 2 of this Application, and references to the USAR are provided where pertinent.

1.4 APPLICATION STRUCTURE

The following discussion describes the content of the NMPNS License Renewal Application (LRA). As an aid to the reviewer, electronic versions of the application contain marked hypertext, which provide links to the referenced sections. Where applicable, revision bars are provided in the margin to indicate amendments to the text submitted by letter NMP1L 1829, dated May 26, 2004[6]. These amendments have incorporated various NRC Staff Requests for Additional Information and are presented in the amended text for clarity sake and to assist the NRC Staff in its continued review of the application.

The application is divided into the following major sections and appendices:

Section 1 – Administrative Information

Section 1 provides the administrative information required by Part 54 of Title 10 of the Code of Federal Regulations, Sections 17 and 19 (10 CFR 54.17 and 10 CFR 54.19).

Section 2 – Structures and Components Subject To Aging Management Review

This section describes and justifies the methods used in the integrated plant assessment to identify those structures and components subject to an aging management review in accordance with the requirements of 10 CFR 54.21(a)(2).

These methods consist of: 1) scoping, which identifies the systems and structures that are within the scope of 10 CFR 54.4(a), and 2) screening

[5] USAR refers to both the NMP1 Updated Final Safety Analysis Report and the NMP2 Updated Safety Analysis Report.
[6] Letter from NMPNS to the NRC, letter number NMP1L 1829, dated May 26, 2004, *Application for Renewed Operating Licenses.*

under 10 CFR 54.21(a)(1), which identifies those in-scope structures and components that perform their intended function without moving parts or a change in configuration or properties, and that are not subject to replacement based on a qualified life or specified time period.

Additionally, the scoping results for systems and structures are presented in Table 2.2-1, NMP1 Plant Level Scoping Results, and Table 2.2-2, NMP2 Plant Level Scoping Results.

The screening results consist of lists of structures and components or component groups that require aging management review. Brief descriptions of systems and structures within the scope of license renewal are provided as background information. Additionally, references to the USAR and the License Renewal (LR) drawings, as applicable, are provided. The drawings, which are provided as a separate attachment to the LRA, are neither incorporated by reference into the application nor considered to be part of the LRA. System and structure intended functions are provided for in-scope systems and structures. For each in-scope system and structure, components or component groups requiring an aging management review are identified.

To aid the reviewer, NMP1 systems and structures are designated by the letter "A" in the section numbering and the letter "B" in the section numbering designates NMP2 systems and structures. For example, the NMP1 Control Rod Drive System has section number 2.3.1.A.1, whereas the NMP2 Control Rod Drive System has section number 2.3.1.B.1.

Selected structural and electrical component groups, such as component supports and cables, were evaluated as commodities. Under the commodity approach, selected structural and electrical component groups were evaluated based upon common environments and materials. For each of these commodities, the components or component groups requiring aging management are presented in Sections 2.4 and 2.5. The letter "C" is used to designate commodities that apply to both units. For example, the component supports commodity has section number 2.4.C.1.

Section 3 – Aging Management Review Results

10 CFR 54.21(a)(3) requires a demonstration that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis throughout the period of extended operation. Section 3 presents the results of the aging management reviews. Section 3 is the link between the scoping and screening results provided in Section 2 and the aging management activities provided in Appendix B. Aging management review results are presented in tabular form, and

arranged by the system or structure associated with one or more intended functions. These tables identify the aging effects and the activities credited with managing the aging effects for component groups within the scope of license renewal. Further information on these tables is provided in Section 3.0.

Selected structural and electrical component groups, such as component supports and cables, were evaluated as commodities based upon common environments and materials. Aging management review results for these commodities are presented in Section 3.5 and Section 3.6.

Section 4 – Time-Limited Aging Analyses

TLAAs, as defined by 10 CFR 54.3, are listed in Section 4. This section includes each of the TLAAs identified in the NRC Standard Review Plan for License Renewal Applications and in plant-specific analyses. This section includes a summary of the time-dependent aspects of the analyses. A demonstration is provided to show that the analyses remain valid for the period of extended operation, the analyses have been, or will be, projected to the end of the period of extended operation, or the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

Appendix A – Updated Final Safety Analysis Report Supplement

As required by 10 CFR 54.21(d), the USAR supplement contains a summary of activities credited for managing the effects of aging for the period of extended operation. In addition, summary descriptions of TLAA evaluations are provided. A separate USAR supplement is provided for NMP1 and NMP2.

Appendix B – Aging Management Programs

This appendix contains the activities that are credited for managing aging effects for structures and components during the period of extended operation based upon the aging management review results provided in Section 3 and the TLAA results provided in Section 4.

Appendix C – Commodity Groups (Optional)

Appendix C is not used.

Appendix D – Technical Specification Changes

This appendix satisfies the requirements of 10 CFR 54.22 to identify whether any technical specification changes or additions are necessary to manage the effects of aging during the period of extended operation.

Appendix E – Environmental Information

This appendix satisfies the requirements of 10 CFR 54.23 to provide a supplement to the environmental report that complies with the requirements of subpart A of 10 CFR Part 51.

1.5 ACRONYMS

The following is a list of the Acronyms used in this application, except for those listed in Table 2.0-1, Intended Functions Abbreviations & Definitions.

ACRONYM	MEANING
115KVAC	115KV AC Electrical Distribution
120VAC	120V AC Electrical Distribution
125VDC	125V DC Electrical Distribution
13.8KVAC	13.8KV AC Electrical Distribution
24VDC	24V DC Electrical Distribution
4.16KVAC	4.16KV AC Electrical Distribution
600VAC	600V AC Electrical Distribution
AC	Alternating Current
ALARA	As Low as Reasonably Achievable
AMP	Aging Management Program
AMR	Aging Management Review
ANSI	American National Standards Institute
ARI	Alternate Rod Insertion
ART	Adjusted Reference Temperature
ASB	Auxiliary Service Building
ASME	American Society Of Mechanical Engineers
ASTM	American Society for Testing Materials
ATWS	Anticipated Transients Without Scram
B24V	Battery-24V-Station
BSW	Biological Shield Wall
BWR	Boiling Water Reactor
BWRVIP	Boiling Water Reactor Vessel and Internals Project
CASS	Cast Austenitic Stainless Steel
CBF	Cycle-Based Fatigue
CCCWS	Closed-Cycle Cooling Water System
CEG	Constellation Energy Group
CFR	Code of Federal Regulations
CGG	Constellation Generation Group
CLB	Current Licensing Basis
CRB	Control Room Building
CRD	Control Rod Drive

ACRONYM	MEANING
CRDRL	Control Rod Drive Return Line
CST	Condensate Storage Tank
CUF	Cumulative Usage Factor
DBA	Design Basis Accident
DBD	Design Basis Document
DBTT	Ductile-to-brittle transition temperature
DC	Direct Current
DER	Deviation Event Report
DGB	Diesel Generator Building
ECS	Emergency Cooling System
ECCS	Emergency Core Cooling Systems
ECT	Eddy Current Testing
EDG	Emergency Diesel Generator
EFPY	Effective Full Power Years
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
ERV	Electromatic Relief Valve
ESF	Engineered Safety Features
EYS	Essential Yard Structures
FAC	Flow-Accelerated Corrosion
FMP	Fatigue Monitoring Program
FPEE	Fire Protection Engineering Evaluation
FW	Feedwater
FW/HPCI	Feedwater / High Pressure Coolant Injection
FWS	Feedwater System
GALL	NUREG-1801, *Generic Aging Lessons Learned Report*
GE	General Electric
GL	Generic Letter
GSI	Generic Safety Issue
GWT	Ground Water Table
HCU	Hydraulic Control Unit
HELB	High Energy Line Break
HEPA	High Efficiency Particulate Air
HPCI	High Pressure Coolant Injection
HPCS	High Pressure Core Spray
HVAC	Heating, Ventilation, and Air Conditioning
I & C	Instrumentation and Controls
IBA	Intermediate-Break Accident
IGSCC	Intergranular Stress Corrosion Cracking
INPO	Institute of Nuclear Power Operations
IPA	Integrated Plant Assessment
ISG	Interim Staff Guidance
ISI	Inservice Inspection
ISP	Integrated Surveillance Program
KV	Kilovolt
KVA	Kilovolt Amperes
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
LPCI	Low Pressure Coolant Injection
LPCS	Low Pressure Core Spray
LR	License Renewal

ACRONYM	MEANING
LRA	License Renewal Application
LRT	Leak Rate Test
MCC	Motor Control Center
MEL	Master Equipment List
MG	Motor Generator
MS	Main Steam
MSIV	Main Steam Isolation Valve
NDE	Non-Destructive Examinations
NEI	Nuclear Energy Institute
NEIL	Nuclear Electric Insurance Limited
NFPA	National Fire Protection Association
NMP1	Nine Mile Point Unit 1
NMP2	Nine Mile Point Unit 2
NMPC	Niagara Mohawk Power Corporation
NMPNS	Nine Mile Point Nuclear Station
NRC	U. S. Nuclear Regulatory Commission
NSR	Non-Safety Related
NUMARC	Nuclear Management and Resources Council (now NEI)
NWSLR	Not Within the Scope of License Renewal
OCCWS	Open-Cycle Cooling Water System
OGB	Offgas Building
ORNL	Oak Ridge National Laboratory
P&ID	Piping and Instrumentation Diagram
PCS	Primary Containment Structure
PM	Preventive Maintenance
PMT	Post-Maintenance Test
P-T	Pressure-Temperature
PTS	Pressurized Thermal Shock
PUAR	Plant-Unique Analysis Report
RB	Reactor Building
RCIC	Reactor Core Isolation Cooling
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal
RPS	Reactor Protection System
RPT	Reactor Recirculation Pump Trip
RPV	Reactor Pressure Vessel
RSSB	Radwaste Solidification and Storage Building
RT_{NDT}	Reference Temperature Nil Ductility Transition Temperature
RWB	Radwaste Building
RWCU	Reactor Water Cleanup
SBA	Small-Break Accident
SBF	Stress Based Fatigue
SBO	Station Blackout
SCs	Structures and Components
SCC	Stress Corrosion Cracking
SDC	Shutdown Cooling
SER	Safety Evaluation Report
SGTB	Standby Gas Treatment Building
SGTS	Standby Gas Treatment System

ACRONYM	MEANING
SOC	Statements of Consideration
SPH	Screen and Pumphouse
SR	Safety Related
SRV	Safety Relief Valve
SSCs	Systems, Structures, and Components
SWB	Screenwell Building
TB	Turbine Building
TBCLC	Turbine Building Closed Loup Cooling
TER	Technical Evaluation Report
TLAAs	Time-Limited Aging Analyses
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supplies
USAR	Updated Safety Analysis Report
USAS	United States of America Standards
USE	Upper-Shelf Energy
UT	Ultrasonic Testing
UV	Ultraviolet
V	Volt
WDB	Waste Disposal Building
WO	Work Order
WSLR	Within the Scope of License Renewal

2.0 SCOPING AND SCREENING METHODOLOGY FOR IDENTIFYING STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW, AND IMPLEMENTATION RESULTS

This section provides the scoping and screening results for those component types that will be subject to aging management review in Section 3.0.

Definitions and abbreviations of the component intended functions, which were used in the scoping, screening, and aging management reviews, are included in Table 2.0-1.

Table 2.0-1: Intended Functions Abbreviations & Definitions

Intended Function	Abbreviation	Definition
Absorbs Neutrons	AN	Absorb neutrons
Direct Flow	DF	Provide spray shield or curbs for directing flow
Electrical Continuity	EC	Provide continuity to deliver electrical signals or power (includes required insulation to accomplish)
Expansion/Separation	ES	Provide for thermal expansion and/or seismic separation
Filter	FLT	Provide filtration
Fire Barrier	FB	Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant
Flood Barrier	FP	Provide flood protection barrier (internal and external flood)
Gaseous Release Path	GDP	Provide path for release of filtered and unfiltered gaseous discharge
Heat Sink	HS	Provide heat sink during station black-out or design-basis accidents
Heat Transfer	HT	Provide heat transfer
HELB Shielding	HELB	Provide shielding against high energy line breaks
Insulate (Electrical)	EI	Insulate and support an electrical conductor
Leakage Boundary (Spatial)	LBS	Non-safety-related (NSR) component that maintains mechanical and structural integrity to prevent spatial interactions that could cause failure of safety-related (SR) SSCs

Table 2.0-1: Intended Functions Abbreviations & Definitions

Intended Function	Abbreviation	Definition
Missile Barrier	MB	Provide missile barrier (internally or externally generated)
NSR Structural Support	NSS	Provide structural support to NSR components whose failure could prevent satisfactory accomplishment of any of the required SR functions
Plateout/Holdup	PH	Provides removal and/or holdup of fission products released in design basis accidents
Pipe Whip Restraint	PWR	Provide pipe whip restraint
Pressure Boundary	PB	Provide pressure retaining boundary so that sufficient flow at adequate pressure is delivered, or provide fission product barrier for containment pressure boundary
Pressure Relief	PR	Provide over-pressure protection
Shelter/Protection	SP	Provide shelter/protection to safety-related components
Shielding	RD	Provide shielding against radiation
Shutdown Cooling Water	SCW	Provide source of colling water for plant shutdown
Spray	SPR	Convert liquid into spray
Structural Integrity (Attached)	SIA	NSR component that maintains mechanical and structural integrity to provide structural support to attached SR piping and components
Structural Pressure Barrier	SPB	Provide pressure boundary or essentially leaktight barrier to protect public health and safety in the event of any postulated design-basis events
Structural Support	SFS	Provide structural and/or functional support to SR equipment
Throttle	FC	Provide flow restriction

2.1 SCOPING AND SCREENING METHODOLOGY

2.1.1 INTRODUCTION

This introduction provides an overview of the scoping and screening process used at the Nine Mile Point Nuclear Station (NMPNS). Subsequent sections provide the details of how these steps were performed. For those systems, structures and components (SSCs) within the scope of license renewal (WSLR), 10 CFR 54.21(a)(1) requires the license renewal applicant, in its integrated plant assessment, to identify and list the structures and components (SCs) subject to an Aging Management Review (AMR). 10 CFR 54.21(a)(2) further requires that the methods used to identify and list the SCs be described and justified. Section 2 of this application satisfies these requirements.

The initial step in scoping was to define NMP1 and NMP2 in terms of their systems and structures. Each of these systems and structures were evaluated against the scoping criteria in 10 CFR 54.4 (a)(1), (2), and (3), to determine if they perform intended functions. This step was accomplished using the Updated Safety Analysis Report (USAR)[7], Maintenance Rule scoping documents, Technical Specifications, docketed correspondence, Design Basis Documents (DBDs), controlled drawings, and the Master Equipment List (MEL), which serves as the component level Q-list at NMPNS. During the initial scoping process, a description and all functions were defined for all systems and structures in the plant. Subsequently, those functions that are intended functions were identified, and portions of the systems and structures that perform those intended functions were identified. Systems and structures meeting the scoping criteria of 10 CFR 54.4 were thus established. Not all of the SCs that make up in-scope systems and structures are WSLR since some do not support intended functions. This determination was made during the component screening process that was used to identify all passive, long-lived SCs that perform intended functions as subject to AMR. In addition, component level intended functions (e.g., pressure boundary, restrict flow) were identified for such SCs prior to AMR.

The NMPNS scoping and screening methodology is described in greater detail in Sections 2.1.2 through 2.1.5. Scoping results are provided in Section 2.2. Screening results are provided in Sections 2.3, 2.4, and 2.5. Figure 2.1.1-1 provides a basic diagram depicting how the scoping and screening process was performed.

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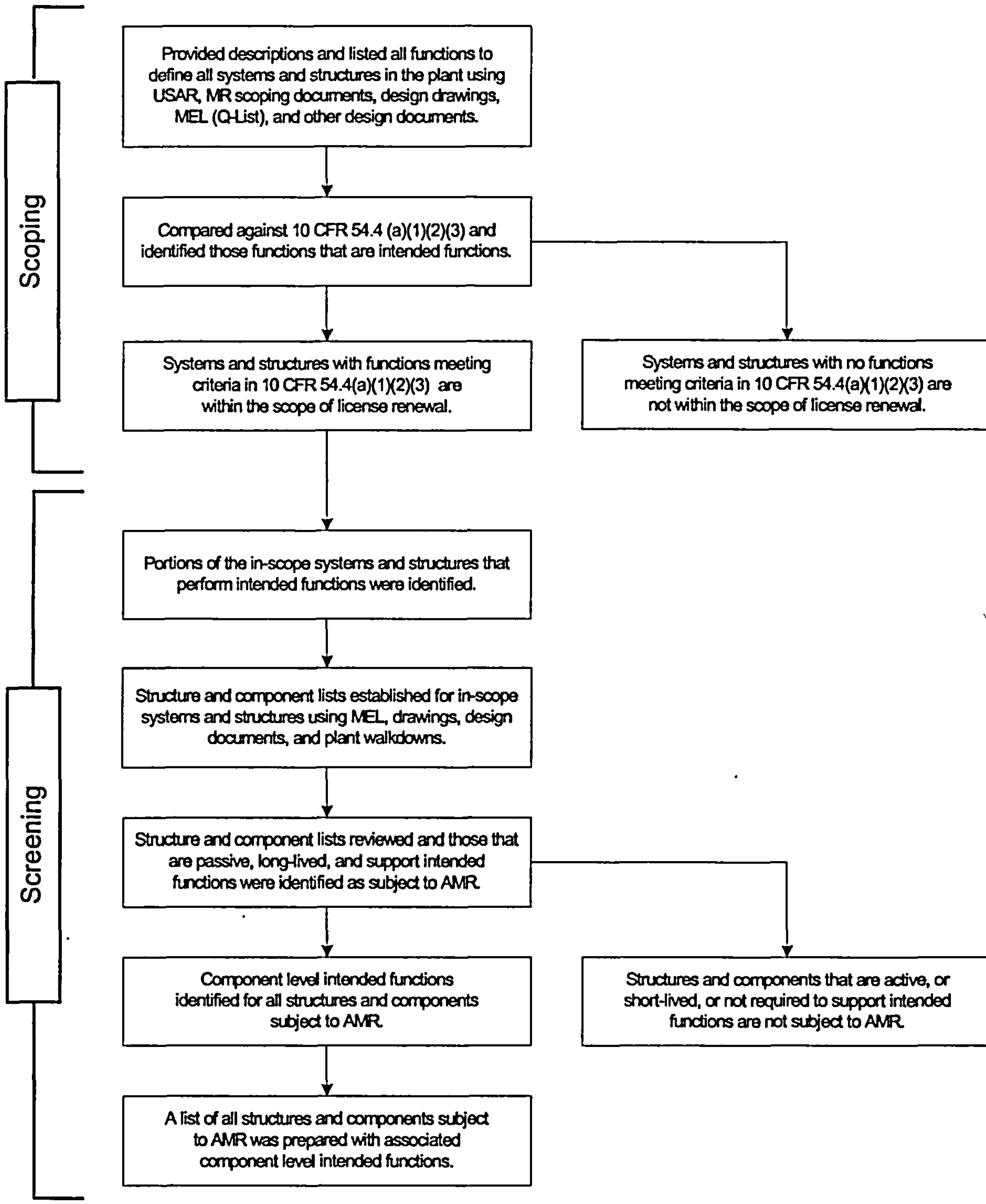
[7] USAR refers to both the NMP1 Updated Final Safety Analysis Report and the NMP2 Updated Safety Analysis Report.

Figure 2.1.1-1 Scoping and Screening Process Overview



2.1.2 PLANT LEVEL SCOPING

10 CFR 54 provides specific criteria for determining which SSCs should be WSLR. Specifically, §54.4 states that:

(a) *Plant systems, structures, and components within the scope of this part are:*

(1) Safety related systems, structures, and components which are those relied upon to remain functional during and following design basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions:

(i) The integrity of the reactor coolant pressure boundary;

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(iii) The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to those referred to in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable.

(2) All non-safety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (ii), or (iii) of this section.

(3) All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

(b) The intended functions that these systems, structures, and components must be shown to fulfill in §54.21 are those functions that are the bases for including them within the scope of license renewal as specified in paragraphs (a)(1) - (3) of this section.

NMPNS systems and structures were reviewed and evaluated against the criteria outlined above to determine those that met the requirements for inclusion in the scope of license renewal.

2.1.3 SYSTEM BOUNDARY AND COMMODITY GROUPINGS

In cases where systems or structures perform similar functions, it was more feasible or efficient to address a smaller system or structure as part of a larger system or structure. In these cases, all components of the smaller system or structure were evaluated with the larger system or structure and all functions of the smaller system or structure were addressed in the larger system or structure. The Plant Level Scoping Results (Section 2.2) indicate when smaller systems or structures are addressed as part of larger systems or structures.

In other cases, it was more feasible or efficient to address only some components of a system or structure with a different system or structure. The main reason for this is that some systems or structures had a small number of components WSLR because they supported the intended function(s) of another system or structure that was WSLR. In such cases, it was appropriate to evaluate aging of those few components with the other system or structure. The LRA scoping and screening results for each system or structure indicate when components were transferred to another system or structure.

Also, many plant components WSLR lend themselves to being evaluated as commodities. Commodities are addressed separately and are not addressed as part of the system or structure in which they reside. There is more discussion regarding commodities in Section 2.1.5.

2.1.4 APPLICATION OF LICENSE RENEWAL SCOPING CRITERION

2.1.4.1 Safety-Related Criteria Pursuant to 10 CFR 54.4(a)(1) (Criterion 1)

As stated above, 10 CFR 54.4(a)(1) states that SSCs within the scope of license renewal include safety related (SR) SSCs that are relied upon to remain functional during and following design basis events [as defined in 10 CFR 50.49(b)(1)] to ensure the following functions:

- the integrity of the reactor coolant pressure boundary;
- the capability to shut down the reactor and maintain it in a safe shutdown condition; or
- the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposure comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11, as applicable.

NMPNS has an established safety classification process that identifies and documents the safety related functions of SSCs. The SR criterion used in that process satisfies the definition of SR specified in 10 CFR 54.4(a)(1)[8]. The Maintenance Rule scoping documents are the primary repository of system function classifications, and the MEL (Q-List) is the primary repository of component classifications. Thus the Maintenance Rule scoping documents were used as the main source for identifying safety related system functions that satisfy Criterion 1. Supporting information from the USAR, Technical Specifications, design documents, design drawings and MEL (Q-List) were reviewed to ensure all safety related system functions were properly identified.

Implementation of the License Renewal Scoping and Screening procedure ensured that the USAR, Technical Specifications, Maintenance Rule scoping documents, design documents, design drawings and MEL (Q-List) were reviewed, as applicable, to ensure all system functions were identified and evaluated against this criterion.

2.1.4.1.1 Conclusion

Based on this review, the license renewal intended functions relative to the criteria of 10 CFR 54.4(a)(1) were identified and documented. Thus, the scoping process used to identify SR systems and structures is consistent with, and satisfies the criteria of, 10 CFR 54.4(a)(1).

2.1.4.2 Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2) (Criterion 2)

As stated above, 10 CFR 54.4(a)(2) requires that all non-safety-related (NSR) SSCs whose failure could prevent satisfactory accomplishment of any of the functions included in Criterion 1 be included within the scope of license renewal (Criterion 2).

SSCs meeting Criterion 2 for NMPNS are included in one of the following three categories:

a. CLB Topics. The NMPNS CLB includes several topics that credit NSR SSCs for preventive or mitigative functions in support of safe shutdown for special events or whose failure could prevent satisfactory accomplishment of a scoping Criterion 1 function.

b. NSR SSCs that are directly connected to SR SSCs (typically piping).

[8] In addition to the guidelines of 10 CFR 100.11, the safety-related criterion of 10 CFR 54.4(a)(1)(iii) includes reference to the dose guidelines of 10 CFR 50.34(a)(1) and 10 CFR 50.67(b)(2). These guidelines apply to facilities seeking a construction permit and to facilities seeking to revise the current accident source term used in their design basis radiological analyses, respectively, and are not applicable to NMPNS.

c. NSR SSCs that are not directly connected to SR SSCs, but whose failure due to spatial proximity could prevent the satisfactory accomplishment of a SR function.

SSCs meeting Criterion 2 for the first two categories (above) were typically identified during document reviews. The process used to review SSCs for 10 CFR 54.4(a)(2) applicability ensured that CLB documents including, but not limited to, the USAR, Technical Specifications, Maintenance Rule scoping documents, design documents, design drawings, docketed correspondence, and the MEL (Q-List) were reviewed, as applicable, to ensure NSR SSC functional interactions were identified where a NSR SSC could fail and prevent the satisfactory accomplishment of a Criterion 1 intended function. In this manner, the non-safety related SSCs meeting the criterion that are explicitly identified in the current licensing basis, such as flood barriers, were identified, as were NSR SSCs that are directly connected to SR SSCs. SSCs in the third category, NSR SSCs that are not directly connected to Criterion 1 SSCs, but whose failure due to spatial proximity could prevent the satisfactory accomplishment of a Criterion 1 function, are typically identified by both document reviews and plant walk downs to identify possible spatial interactions meeting the broad criteria established for license renewal.

2.1.4.2.1 CLB Review

Based upon a review of the CLB and following the guidelines provided in NEI-95-10, Revision 5, Appendix F, Section 3, *Non-Safety SSCs Typically Identified in the Current Licensing Basis*, those topics that meet Scoping Criterion 2 are:

- <u>HELB</u>

NMP1 was designed and constructed prior to 10 CFR 50, Appendix A, General Design Criteria 4, *Environmental and Dynamic Effects Design Bases*. Accordingly, NMP1 was not designed in accordance with this criterion. The original design basis was that the probability of double-ended guillotine pipe rupture was extremely low and that protection against the dynamic effects of the rupture was not considered. The licensing basis is that the inherent features and capabilities provide a basis for reasonable assurance that the facility design meets the intent of the criteria. In this regard, pipe whip coping analyses were performed which concluded that the containment integrity was maintained with no loss of function and that the engineered safeguard systems provide core cooling and safe shutdown capability. The final CLB-HELB scoping determination for NMP1 is based on a review of applicable plant documentation, including USAR Section XVI.16.D.2, *Plant Design for Protection Against Postulated Piping failures in High Energy Lines*. Those NSR SSCs (e.g., blow out panels, leak detection instrumentation) which are credited for protecting SR SSCs from a HELB event are included in the scope of 10 CFR 54.4(a)(2).

NMP2 USAR Section 3.6, *Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping*, describes the design for protection against postulated piping failures both inside and outside containment for all high and moderate energy piping systems. Section 3.6 provides or references plant layout drawings, system piping and arrangement drawings and a description of how SSCs conform to related design criteria and bases. Also discussed is the ability to perform a safe shutdown after a postulated piping failure of a high or moderate energy system. The final CLB-HELB scoping determination for NMP2 is based on a review of applicable plant documentation, including the referenced USAR section. It was determined that all the NMP2 SSCs which are credited for protecting from a HELB event are SR; therefore no NSR SSCs meet this criteria.

- **Flooding**

NMP1 USAR Section I.A.2, *Buildings and Structures*, states, in part, that the principal structures and equipment which may serve either to prevent accidents or to mitigate their consequences are designed, fabricated and erected in accordance with applicable codes to withstand the most severe flooding condition which can be expected to occur at the site. The final CLB-Flooding scoping determination is based on a review of applicable plant documentation including include the NMP1 Probabilistic Risk Assessment (PRA), which discusses internal flooding, and Design Criteria Document (DCD)-120, *External Events*. Those NSR SSCs (e.g., building sumps, doors) which are credited for protecting SR SSCs from a flooding event are included in the scope of 10 CFR 54.4(a)(2).

NMP2 systems and components necessary for the safe shutdown of the plant (USAR Table 3.4-1) are flood protected by physically locating them within flood-protected structures (USAR 3.4.1.1.1). The design features which provide this protection are described in various USAR sections including Section 3.4, *Water Level (Flood) Design*, and Section 2.4, *Hydrologic Engineering*, and system specific discussions. USAR Table 1.8-1 provides the NMP2 position regarding RG 1.59, *Design Basis Floods for Nuclear Power Plants*. The final CLB-Flooding scoping determination is based on a review of applicable plant documentation including the NMP2 PRA, which discusses internal flooding, and the USAR Sections discussed above. Those NSR SSCs (e.g., building sumps, doors) which are credited for protecting SR SSCs from a flooding event are included in the scope of 10 CFR 54.4(a)(2).

- **Missiles**

NMP1 USAR Section XVI.B.2.3, *Capability to Withstand Internal Missiles and Jet Forces*, indicates that potential missile and jet hazards within the containment were examined. These studies indicated that drywell integrity would be maintained in all cases with the limited deflection that could occur. Also, USAR Section XVI.D.4.0 provides a discussion of tornado-induced missiles (external missiles). The final CLB-Missile scoping determination is based on a review of the above USAR Sections and other applicable plant documentation as appropriate. Those NSR SSCs (missile barriers) which are credited for protecting SR SSCs from a missile event are included in the scope of 10 CFR 54.4(a)(2).

NMP2 USAR Section 3.5, *Missile Protection*, provides a detailed description of the NMP2 approach to missile protection. Section 3.5 discusses both internally and externally generated missiles, the SSCs that are required to be protected, and the design features in place to provide the required protection. The final CLB-Missile scoping determination is based on a review of the above USAR Section and applicable plant documentation, as appropriate. Those NSR SSCs (missile barriers) which are credited for protecting SR SSCs from a missile event are included in the scope of 10 CFR 54.4(a)(2).

- **Cranes**

NRC issued criteria, contained in NUREG-0612 and applicable to both NMP1 and NMP2, provide guidelines for preventing heavy load drops that might affect SR equipment or cause fuel damage that would result in a significant off-site release. NSR cranes, monorails or hoists which satisfy heavy load requirements of NUREG-0612 are within the scope of license renewal. Other NSR cranes, monorails, hoists not meeting heavy load criteria but located in areas containing SR SSCs were evaluated for inclusion in the license renewal scope since their failure could adversely impact a Criterion 1 function. The final CLB-Crane scoping determination is based on a review of applicable documentation for each unit, including appropriate sections of each unit USAR, correspondence with the NRC regarding NUREG-0612 commitments, and procedures which describe the uses and safe load paths of NMP1 and NMP2 cranes and hoists.

2.1.4.2.2 NSR SSCs Directly Connected to SR SSCs

NEI 95-10, Revision 5, Appendix F, Section 4, *Non-Safety SSCs Directly Connected to Safety-Related SSCs*, provides criteria for the scoping of plant NSR SSCs directly connected to Criterion 1 SSCs. NMPNS utilized these criteria (except for those portions not endorsed by the NRC) in evaluating the subject SSCs to satisfy the requirements of 10 CFR 54.4(a)(2). The specific scoping methodology first identified mechanical systems containing SR components and then evaluated these systems to identify any containing a NSR structural interface. These interfaces were identified on plant drawings (system P&IDs, Q-list drawings, piping isometrics, instrument drawings, as appropriate) and individually evaluated to identify NSR mechanical and structural components up to and including the first equivalent anchor or a smaller branch line where the moment of inertia ratio of the larger piping to the smaller piping was equal to or greater than the original design basis ratio. (Significantly smaller piping does not impose loads on larger piping and does not support larger piping.) The first equivalent anchor could be a seismic anchor, a combination of supports, or a piece of equipment with sufficient rigidity. The resulting in-scope NSR components were highlighted on plant drawings such that the scope of the NSR components to be screened within the scope of license renewal was clearly identified. Following this scoping activity, a confirmatory walk down was performed of the in-scope NSR components located in accessible areas. For those interfaces located in inaccessible areas, a subject matter expert drawing review was substituted for a plant walk down. The comprehensive application of NEI 95-10 scoping criteria, combined with confirmatory plant walk downs serves to satisfy Criterion 2 for the scoping of plant NSR SSCs directly connected to SR SSCs.

Within the NSR scoping effort, NMPNS includes within the scope of license renewal and subject to AMR those SSCs within the boundaries of the equivalent anchor, including each equivalent anchor. Also, the inclusion of an equivalent anchor is not dependent on its location within a SR or NSR building. For those cases where NSR piping transitions from a SR building to a NSR building before the equivalent anchor is located, the NSR piping in the NSR building is included within the scope of LR and subject to AMR up to the equivalent anchor located in the NSR building.

For NMP1, the term "equivalent anchor" means a series of supports and changes in a piping geometry that combine to provide restraint to the piping in six degrees of freedom. For NMP2, the term "equivalent anchor" means an actual anchor that provides restraint to the piping in six degrees of freedom.

2.1.4.2.3 NSR SSCs Not Directly Connected to SR SSCs

NEI 95-10, Revision 5, Appendix F, Section 5, *Non-Safety SSCs Not Directly Connected to Safety-Related SSCs,* provides criteria for the scoping of plant NSR SSCs in proximity of SR SSCs. NMPNS utilized these criteria (excluding the Exposure Duration exclusion not endorsed by the NRC) in evaluating the subject SSCs to satisfy the requirements of 10 CFR 54.4(a)(2). The specific scoping methodology utilized plant documentation (MEL (Q-list)) to identify those locations (building, elevation, room) containing SR SSCs. Comprehensive walk downs of accessible areas, utilizing a spaces approach and a conservative set of walk down criteria, were performed by personnel knowledgeable in plant layout, system design, and operation. Inaccessible areas were evaluated through the use of installed cameras (where available), controlled drawing review, and/or evaluation/assessment by subject matter experts. The comprehensive application of NEI 95-10 scoping criteria, combined with comprehensive plant walk downs serves to satisfy Criterion 2 for the scoping of plant NSR SSCs in proximity of SR SSCs.

As stated in NEI 95-10, air and gas systems are not a hazard to other plant equipment. Therefore, these systems are not included in the scope of 10 CFR 54.4(a)(2).

Scoping criteria considered both the effects of high energy systems (pipe whip, jet impingement, harsh environment, etc.) and the effects of moderate/low energy systems (spray, leakage). Spray and leak interactions were evaluated without regard to whether the SR components were active or passive and without regard to the duration of the spray or leak. Pressurized liquid systems in the vicinity of SR components are in-scope for license renewal and assumed to leak anywhere around the circumference or along the length of the pipe. Based upon these criteria, NMPNS considers non-safety related piping, fittings, and equipment containing fluid or steam to be WSLR if located in the vicinity of safety related equipment. Non-safety related piping, fittings, and equipment are considered to be in the vicinity of safety-related equipment if located in the same building, corridor, floor, and room as safety-related equipment.

Scoping criteria also considered NSR SSCs (including certain second-, third-, or fourth-level support systems) whose failure could prevent the satisfactory accomplishment of Criterion 1 functions. NMPMS reviewed the CLB for each station and reviewed plant-specific and industry operating experience to identify these NSR SSCs. Hypothetical failures not part of the CLB or not previously experienced were not considered as part of this evaluation.

Component supports required for NSR SSCs to prevent physical interactions with SR SSCs are WSLR for NMPNS. These supports must remain in place such that they do not impact equipment that is required to perform an intended function in such a way as to prevent the equipment from performing its intended function. Therefore, NMPNS considers all non-safety related supports, including seismic II/I supports, to be WSLR if located in areas housing safety-related equipment.

2.1.4.2.4 Conclusion

The review of site and industry operating experience did not identify any issues other than those stipulated above that are applicable to NMPNS. Based on the reviews described, the license renewal intended functions relative to the criteria of 10 CFR 54.4(a)(2) were identified and documented. Thus, the scoping process used to identify NSR SSCs affecting Criterion 1 intended functions is consistent with, and satisfies the criteria of, 10 CFR 54.4(a)(2).

2.1.4.3 Regulated Event Scoping Pursuant to 10 CFR 54.4(a)(3) (Criterion 3)

As previously noted, 10 CFR 54.4(a)(3) states that SSCs WSLR include all SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The process used to review SSCs for 10 CFR 54.4(a)(3) applicability ensured that the USAR, Technical Specifications, Maintenance Rule scoping documents, design documents, design drawings, and MEL (Q-List) were reviewed as applicable to ensure all SSCs credited for compliance with the regulated event set were identified and evaluated against this criteria. Specific scoping for each regulated event is described in the following sections.

2.1.4.3.1 Fire Protection (FP)

NMP1 USAR Sections X.10A, *Fire Hazards Analysis*, X.10B, *Safe Shutdown Analysis*, and X.K, *Fire Protection Program* and NMP2 USAR Section 9.5.1, *Fire Protection Systems*, describe the station fire protection and post fire safe shutdown equipment. Fire protection, detection, mitigation, confinement, and safe shutdown equipment used at the station was reviewed during the scoping process.

Evaluations were performed on equipment needed to meet the fire protection requirements of Appendix A to Branch Technical Position APCSB 9.5-1, *Guidelines for Fire Protection for Nuclear Power Plants* (Reference 2.1-2), as well as those needed to meet 10 CFR 50, Appendix R and 10 CFR 50.48. These evaluations were used as fire protection scoping basis documents. Structures and systems that contain components relied on to protect SR structures and components and equipment required to mitigate off-site release from a fire or explosion are WSLR.

2.1.4.3.2 Environmental Qualification (EQ)

The master list of EQ components is detailed in each unit's MEL. Systems that contain components identified in the EQ master equipment list, as defined by 10 CFR 50.49, are WSLR.

2.1.4.3.3 Pressurized Thermal Shock (PTS)

PTS is an issue for Pressurized Water Reactors. NMP1 and NMP2 are BWRs. Therefore, scoping for this criterion is not applicable.

2.1.4.3.4 Anticipated Transients Without Scram (ATWS)

NMP1 USAR Section VIII.A.1.2, *Anticipated Transients Without Scram Mitigation System and NMP2 USAR Section 15.8, Anticipated Transient Without Scram,* describe the system(s) installed to conform to 10 CFR 50.62. Components in the system that are credited for compliance with 10 CFR 50.62 are included in the scope of license renewal. Systems that contain those components are WSLR.

2.1.4.3.5 Station Blackout (SBO)

As part of the NMPNS license renewal effort, plant documents were reviewed to identify systems, structures, and associated intended functions required for compliance with 10 CFR 50.63, *Loss of All Alternating Current Power*, also referred to as Station Blackout (SBO). During an SBO event, this equipment is required to ensure the NMP plant(s) have the capability to withstand (cope) and recover from the loss of offsite and onsite AC power for a four hour coping duration.

The offsite power system is credited as a means of recovering from a SBO. For the purpose of the LR rule, the NRC staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule (Reference 2.1-6). This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers, the transformers themselves, the intervening overhead or underground circuits between the circuit breakers and transformers, and associated control circuits and structures.

Based on the guidance in Reference 2.1-6 for Station Blackout recovery, an additional evaluation was performed at NMP to determine, and bring into scope of LR, components credited for recovery of the offsite power system. For each of the systems credited for SBO recovery, a scoping/screening report was developed. Additionally, an Aging Management Review was performed for all long-lived passive structures and components within these systems.

A list of the NMP1 and NMP2 SBO recovery systems is provided below:

- NMP1 4.16KV AC Electrical Distribution System (Section 2.5.A.5)
- NMP1 115KV AC Electrical Distribution System (Section 2.5.A.6)
- NMP2 Reserve Station Service Transformers System (Section 2.5.B.21)
- NMP2 Switchyard System (Section 2.5.B.29)

2.1.4.3.6 Conclusion

Based on the above, the license renewal scoping process used to identify the applicable intended functions and SSCs relied upon to mitigate the regulated events is consistent with, and satisfies the criteria of, 10 CFR 54.4(a)(3).

2.1.5 COMPONENT SCREENING

The requirement to identify SCs subject to AMR is specified in 10 CFR 54.21(a)(1):

Each application must contain the following information:

(a) An integrated plant assessment (IPA). The IPA must:

(1) For those systems, structures, and components within the scope of this part, as delineated in §54.4, identify and list those structures and components subject to an aging management review. Structures and components subject to an aging management review shall encompass those structures and components -

(i) That perform an intended function, as described in §54.4 without moving parts or without a change in configuration or properties. These structures and components include, but are not limited to, the reactor vessel, the reactor coolant system pressure boundary, steam generators, the pressurizer, piping, pump casings, valve bodies, the core shroud, component supports, pressure retaining boundaries, heat exchangers, ventilation ducts, the containment, the containment liner, electrical and mechanical penetrations,

equipment hatches, seismic Category 1 structures, electrical cables and connections, cable trays, and electrical cabinets, excluding, but not limited to, pumps (except casing), valves (except body), motors, diesel generators, air compressors, snubbers, the control rod drive, ventilation dampers, pressure transmitters, pressure indicators, water level indicators, switchgears, cooling fans, transistors, batteries, breakers, relays, switches, power inverters, circuit boards, battery chargers, and power supplies; and

(ii) *That are not subject to replacement based on a qualified life or specified time period.*

The screening portion of the IPA methodology was divided into three engineering disciplines; mechanical, civil, and electrical and instrumentation and control (I&C). The relevant aspects of the component screening process for mechanical systems, civil structures, structural commodity groups, and electrical and I&C systems are described below in Sections 2.1.5.1 through 2.1.5.4, followed by generic screening considerations in Section 2.1.5.5.

2.1.5.1 Mechanical Systems

For mechanical systems, the component screening process was performed on each system identified to be WSLR. This process determined which components of in-scope mechanical systems require AMR.

The portions of mechanical systems that perform intended functions were established for each system WSLR. This was done by mapping the pressure boundary associated with system intended functions onto the system diagrams.

The steps performed on each mechanical system WSLR were as follows:

- Based on a review of design drawings and the system component list from the MEL database, components that are included within the system were identified.

- Based on the plant level scoping results, the pressure boundary associated with system intended functions was mapped onto the system diagrams. The intended function markups for a system have been defined consistent with the boundaries established in the CLB. Those boundaries do not always coincide with pipe class changes. As described in Section 2.1.4.2, actual aging management evaluation boundaries may extend beyond the graphical depiction of the screening boundary on system drawings.

- Active components were identified and eliminated from further consideration with regard to AMR. Passive components (those that function without moving parts or without a change in configuration or properties) were identified for further review [screening criterion of 10 CFR 54.21(a)(1)(i)]. Active/passive screening determinations were based on the guidance in NEI-95-10 (Reference 2.1-3). Housings of ventilation components were considered to form an integral part of the pressure-retaining boundary analogous to valve bodies and pump casings.

- The passive, in-scope components that are not subject to replacement based on a qualified life or specified time period [screening criterion of 10 CFR 54.21(a)(1)(ii)] were identified as requiring an AMR. The determination of whether a passive, in-scope component has a qualified life or specified replacement time period was based on a review of maintenance programs and procedures.

- Component intended functions for components that are subject to AMR were identified. The component intended functions identified were based on the guidance of Reference 2.1-3.

2.1.5.2 Civil Structures

For structures, the screening process was performed on each structure identified to be WSLR. This method evaluated the SCs included within in-scope structures to identify specific SCs or SC groups that require an AMR.

The steps performed on each structure determined to be WSLR were as follows:

- Based on a review of CLB documents and the MEL database, SCs that are included within a structure were identified. These SCs include items such as walls, pipe and equipment supports, conduit, cable trays, electrical enclosures, instrument panels, pipe whip restraints, fire barriers, liners, sump screens, doors, blowout panels, flood barriers, missile shields, and jet impingement shields relied upon in the licensing basis. As indicated in Section 2.1.4.2, structural components required to support NSR components to prevent physical interactions with SR equipment are WSLR. These supports must remain in place such that the NSR components do not impact equipment that is required to perform an intended function in such a way as to prevent the equipment from performing its intended function.

- The SCs that are WSLR (i.e., required to perform intended functions) were identified.

- The in-scope SCs that perform an intended function without moving parts or without a change in configuration or properties [screening criterion of 10 CFR 54.21(a)(1)(i)] were identified. Active/passive screening determinations were based on the guidance in Appendix B of Reference 2.1-3.

- The passive, in-scope SCs that are not subject to replacement based on a qualified life or specified time period [screening criterion of 10 CFR 54.21(a)(1)(ii)] were identified as requiring an AMR. The determination of whether a passive, in-scope SC has a qualified life or specified replacement time period was based on a review of maintenance programs and procedures.

- Component intended functions for SCs that are subject to AMR were identified. The component intended functions identified were based on the guidance of Reference 2.1-3.

2.1.5.3 Structural Commodity Groups

Civil structures WSLR also house and support functionally unique features that may be included WSLR. These structural elements are best-described and evaluated within structural commodity groupings.

Example: The Auxiliary Building contains hundreds of fire barriers and seals. Most of these barriers perform a license renewal intended function. Rather than listing all of the barrier numbers as a subset of the Auxiliary Building components, the barriers are binned together in a commodity group and addressed as a group.

The structural commodity evaluation groups are:

- Component Supports (Section 2.4.C.1)

- Fire Stops and Seals (Section 2.4.C.2)

2.1.5.4 Electrical and Instrumentation & Control (I&C) Systems

The screening methodology employed for electrical and I&C components was consistent with the guidance in NEI 95-10 (Reference 2.1-3). All passive long-lived electrical components were evaluated as commodities regardless of the system or structure in which they reside in the MEL. As a result, the electrical systems only contain active components that are not subject to AMR. An AMR was then conducted on a commodity basis for the entire population of passive long-lived components. Identification of individual components that perform intended functions was not performed.

Electrical and I&C components associated with the 10 CFR 50.49 program (EQ) are replaced on a specified interval based on a qualified life. Therefore, components in the EQ program do not meet the "long-lived" criteria of 10 CFR 54.21(a)(1)(ii). They are "short-lived" per the regulatory definition and are not subject to AMR.

Based on a review of the USAR, the MEL, design basis documents, previous license renewal applications, and Reference 2.1-3, the following list represents the passive electrical and I&C component commodity groups at NMPNS:

- Cables and Connectors (including splices, connectors, terminal blocks, and fuse holders) (Section 2.5.C.1)
- Non-Segregated/Switchyard Bus (Section 2.5.C.2)
- Containment Electrical Penetrations (Section 2.5.C.3)
- Switchyard Components (Section 2.5.C.4)

The interface of electrical and I&C components with other types of components, and the assessments of these interfacing components, are provided in the appropriate mechanical or civil/structural sections. For example, the assessment of electrical racks, panels, frames, cabinets, cable trays, conduit, and their supports is provided in the civil/structural assessment documented in Section 2.4.

2.1.5.5 Consumables

Consistent with References 2.1-1 and 2.1-3, consumables may be divided into the following four categories for the purpose of license renewal: (a) packing, gaskets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs. The consumables in both category (a) and (b) are considered as subcomponents and are not explicitly called out in the scoping and screening procedures. Rather, they are implicitly included at the component level (e.g., if a valve is identified as being in scope, a seal in that valve would also be in scope as a subcomponent of that valve). For category (a), these subcomponents can be excluded using a clear basis, such as items that are not considered pressure boundaries in applicable design codes. For category (b), these subcomponents may perform functions without moving parts or a change in configuration, and they are not typically replaced. The consumables in category (c) are short-lived and periodically replaced, and can be excluded from an AMR on that basis. Likewise, the consumables that fall within category (d) are typically replaced based on performance or condition monitoring. More details for each of these areas are provided below.

2.1.5.5.1 Packing, Gaskets, Component Seals, And O-Rings

Packing, gaskets, component mechanical seals, and O-rings are typically used to provide a leak-proof seal when components are mechanically joined together. These items are commonly found in components such as valves, pumps, heat exchangers, ventilation units/ducts, and piping segments. These types of consumables are considered subcomponents of the identified components and, therefore, are not subject to their own condition or performance monitoring. Packing, gaskets, component seals, and O-rings are excluded from AMR, as they are not considered pressure boundaries in ASME Section III or USAS B31.1 or USAS B31.7. Otherwise, the AMR for the component included an evaluation of the sealing materials in those instances where it could not be demonstrated that one of the following conditions exist:

1. The sealing materials are short-lived because they are replaced on a fixed frequency or have a qualified life established, or
2. The sealing materials are not relied on in the CLB to maintain any of the following:
    - Leakage below established limits
    - System pressure high enough to deliver specified flow rates
    - A pressure envelope for a space

2.1.5.5.2 Structural Sealants

These types of sealants historically are not replaced on a fixed interval and do not have qualified lives. Therefore, seals determined to be WSLR are treated as long-lived items and subject to an AMR.

2.1.5.5.3 Oil, Grease, and Filters

Oil, grease, and component filters do not require an AMR because they are periodically replaced; therefore, they are short-lived.

2.1.5.5.4 System Filters, Fire Extinguishers, Fire Hoses, and Air Packs

Components such as system filters, fire hoses and fire extinguishers, and air packs are considered to be consumables. Those determined to be WSLR are not subject to AMR and are replaced based on condition or performance monitoring by the following programs. System filter replacement is performed in accordance with the NMPNS Periodic Surveillance and Preventive Maintenance Program. Fire extinguisher replacement is in accordance with NFPA 10, *Standard for Portable Fire Extinguishers.* Fire hose replacement is in accordance with NFPA 1962, *Standard for the Care, Use and Service Testing of Fire Hose Including Couplings and Nozzles.* Air packs are replaced in accordance with ANSI Z88.2-1992, *Practices for Respiratory Protection.*

2.1.5.6 Conclusion

Based on the above, the license renewal component screening process used to identify the SCs that require an AMR is consistent with, and satisfies the criteria of, 10 CFR 54.21(a)(1).

2.1.6 INTERIM STAFF GUIDANCE (ISG) DISCUSSION

This section presents a summary of the NMPNS response to the following ISGs:

ISG NO.	ISG TITLE	SECTION NO.
ISG-01	Proposed Staff Guidance on the Position of the GALL Report Presenting One Acceptable Way to Manage Aging Effects for License Renewal	Section 2.1.6.1
ISG-02	Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal	Section 2.1.6.2
ISG-03	Proposed Revision of Chapters II and III of Generic Aging Lessons Learned (GALL) Report on Aging Management of Concrete Elements	Section 2.1.6.3
ISG-04	Interim Staff Guidance (ISG)-04: Aging Management of Fire Protection Systems for License Renewal	Section 2.1.6.4
ISG-05	Interim Staff Guidance (ISG)-5 on the Identification and Treatment of Electrical Fuse Holders for License Renewal	Section 2.1.6.5
ISG-06	Proposed Interim Staff Guidance on Identification and Treatment of Housing for Active Components for License Renewal	Section 2.1.6.6
ISG-07	Proposed Staff Guidance on the Scoping Guidance for Fire Protection Equipment for License Renewal	Section 2.1.6.7
ISG-08	Process for Interim Staff Guidance Development and Implementation	Section 2.1.6.8

ISG NO.	ISG TITLE	SECTION NO.
ISG-09	Industry Guidance on Revised 54.4(a)(2) Scoping Criterion for License Renewal	Section 2.1.6.9
ISG-10	Standardardized Format for License Renewal Application	Section 2.1.6.10
ISG-11	Recommendations for Fatigue Environmental Effects in a License Renewal Application	Section 2.1.6.11
ISG-12	Addition of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.M35, "One-Time Inspection of Small-Bore Piping," for License Renewal	Section 2.1.6.12
ISG-13	To review the use of the loose parts monitoring (XI.M14) system for the management of the loss of preload on reactor vessel internal bolting.	Section 2.1.6.13
ISG-14	To capture the operational experience related to the cracking of bolting.	Section 2.1.6.14
ISG-15	Proposed Interim Staff Guidance (ISG)-15: Revision of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.E2, Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	Section 2.1.6.15
ISG-16	Proposed Interim Staff Guidance (ISG)-16: Time-Limited Aging Analyses (TLAAs) Supporting Information for License Renewal Applications	Section 2.1.6.16
ISG-17	Interim Staff Guidance (ISG)-17: Proposed Aging Management Program (AMP) XI.E4, "Periodic Inspection of Bus Ducts," for License Renewal	Section 2.1.6.17
ISG-18	To develop aging management procedure to prevent moisture collection in man hole and to revise GALL AMP XI.E3	Section 2.1.6.18
ISG-19A	Proposed Aging Management Program XI.M11-A, 'Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors (PWRs Only)	Section 2.1.6.19
ISG-19B	Proposed Aging Management Program XI.M11-B, 'Nickel-Alloy Base-Metal Components and Welds in the Reactor Coolant Pressure Boundary,' for License Renewal	Section 2.1.6.20
ISG-20	Revise aging management program XI.M19 to include steam generator tube integrity	Section 2.1.6.21
ISG-21	Revise Chapter IV tables, AMP XI.M9 and AMP XI.M16, to provide improved guidance on reactor vessel internals	Section 2.1.6.22
ISG-22	To address thermal aging embrittlement of CASS components	Section 2.1.6.23

ISG NO.	ISG TITLE	SECTION NO.
ISG-23	To provide guidance on how to handle replacement parts for 10 CFR 50.48	Section 2.1.6.24

2.1.6.1 ISG-01 Proposed Staff Guidance on the Position of the GALL Report Presenting One Acceptable Way to Manage Aging Effects for License Renewal

NUREG-1801 is used as a reference for Section 3.

2.1.6.2 ISG-02 Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR Part 50.63) for License Renewal

Scoping related to SBO is discussed in Section 2.1.4.3.5. Scoping is in accordance with the ISG.

2.1.6.3 ISG-03 Proposed Revision of Chapters II and III of Generic Aging Lessons Learned (GALL) Report on Aging Management of Concrete Elements

Concrete subject to aging management review has been included in an aging management program in accordance with the ISG. This includes concrete for which no aging effects requiring management were identified (see Section 3.5).

2.1.6.4 ISG-04 Interim Staff Guidance (ISG)-04: Aging Management of Fire Protection Systems for License Renewal

This ISG dealt with three aspects of the Fire Protection (FP) system aging management program.

Wall Thinning of FP Piping due to Internal Corrosion

As stated in the ISG, disassembling portions of the FP piping as described in NUREG-1801 Chapter XI.M27 may not be the most effective means to detect this aging effect. The use of a non-intrusive means of evaluating wall thickness is recommended. The Fire Water System Program (Appendix B2.1.17) will address the means of evaluating wall thickness.

Testing of Sprinkler Heads

The Fire Water System Program (Appendix B2.1.17) includes the applicable National Fire Protection Association (NFPA) codes and standards.

Valve Lineup Inspections of Halon/Carbon Dioxide Fire Suppression Systems

The ISG states *valve lineup inspections, charging pressure inspections, and automatic mode of operation verifications for the halon/carbon dioxide system are operational activities pertaining to system or component configurations or properties that may change, and are not related to aging management. Therefore, the staff position is to eliminate the halon/carbon dioxide system inspections for charging pressure, valve lineups, and automatic mode of operation.* Accordingly, these inspections are not credited in the fire protection program.

2.1.6.5 ISG-05, Interim Staff Guidance (ISG)-05 on the Identification and Treatment of Electrical Fuse Holders for License Renewal

Fuse holders (including fuse clips and fuse blocks) are passive, long-lived electrical components that are WSLR and are subject to an AMR as part of the Cables and Connections commodity (see Section 2.1.5.4). Additionally, NMPNS credits the Fuse Holders Program (see Appendix B2.1.35) for identifying potential age-related degradation for fuse holders.

2.1.6.6 ISG-06, Proposed Interim Staff Guidance on Identification and Treatment of Housing for Active Components for License Renewal

NMPNS has considered housing of active ventilation components as passive components, analogous to valve bodies and pump casings, and subject to AMR.

2.1.6.7 ISG-07, Proposed Staff Guidance on the Scoping of Fire Protection Equipment for License Renewal

The NRC issued this proposed ISG for comment on November 13, 2002 andsubsequently determined it was not needed on June 17, 2005. The NMPNS scoping methodology considered the guidance in the proposed ISG (see Section 2.1.4.3.1).

2.1.6.8 ISG-08, Process for Interim Staff Guidance Development and Implementation

This is an administrative issue and does not affect NMPNS LRA.

2.1.6.9 ISG-09,Industry Guidance on Revised 54.4(a)(2) Scoping Criterion for License Renewal

The NRC issued this proposed ISG for comment on March 15, 2002, and it has not yet been finalized. 10 CFR 54.4(a)(2) states that SSCs WSLR include NSR SSCs whose failure could prevent satisfactory accomplishment of any SR intended functions of SSCs. NMPNS's position on this issue is discussed in Section 2.1.4.2.

2.1.6.10 ISG-10, Standardized Format for License Renewal Application

The NMPNS LRA closely follows the Standard License Renewal Application format in NEI 95-10, Revision 6.

2.1.6.11 ISG-11, Recommendations for Fatigue Environmental Effects in a License Renewal Application

Aging management of environmental fatigue for carbon/low-alloy steel items is discussed in Section 4.3.6.

2.1.6.12 ISG-12, Addition of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.M35, "One-Time Inspection of Small-Bore Piping," for License Renewal

The NRC issued this proposed ISG for comment on November 3, 2003 and subsequently withdrew and closed it. The NMPNS inspection of in-scope small-bore piping is part of the One-Time Inspection Program (see Appendix B2.1.20).

2.1.6.13 ISG-13, To review the use of the loose parts monitoring (XI.M14) system for the management of the loss of preload on reactor vessel internal bolting

NMP1 does not have a Loose Parts Monitoring System. NMP2 has a Loose Parts Monitoring System but is not WSLR (Table 2.2-2). Aging management of reactor vessel internals is addressed in Section B2.1.8. This program is consistent with latest industry and regulatory License Renewal precedence.

2.1.6.14 ISG-14, To capture the operational experience related to the cracking of bolting

The NRC issued this proposed ISG for comment and subsequently withdrew and closed it. The guidance related to cracking of bolting has been incorporated in proposed draft revisions to License Renewal Guidance Documents (LRGDs). Aging management of in-scope NMPNS bolting is addressed in B2.1.36, “Bolting Integrity”. This program is consistent with latest industry and regulatory License Renewal precedence.

2.1.6.15 ISG-15, Proposed Interim Staff Guidance (ISG)-15: Revision of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.E2, "Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits" for License Renewal

The NRC issued this proposed ISG for comment on August 12, 2003and has subsequently incorporated it in the proposed draft LRGDs. Appendix B2.1.30 describes the Non-EQ Electrical Cables and Connections used in Instrumentation Circuits Program, which, following enhancements, will be comparable to the program described in NUREG-1801, Chapter XI.E2. This program is consistent with latest industry and regulatory License Renewal precedence.

2.1.6.16 ISG-16, Proposed Interim Staff Guidance (ISG)-16: Time-Limited Aging Analyses (TLAAs) Supporting Information For License Renewal Applications

The NRC issued this proposed ISG for comment on August 12, 2003 and has subsequently incorporated it into the proposed draft LRGDs. NMPNS has considered this draft guidance in the discussion of TLAA evaluations in Section 4.0.

2.1.6.17 ISG-17, Interim Staff Guidance (ISG)-17: Proposed Aging Management Program (AMP) XI.E4, “Periodic Inspection of Bus Ducts,” for License Renewal

The NRC issued this proposed ISG for comment on December 23, 2004 and subsequently incorporated it into the proposed draft LRGDs. The NMPNS Non-Segregated Bus Inspection Program is described in Appendix B2.1.34. This program is consistent with latest industry and regulatory License Renewal precedence.

2.1.6.18 ISG-18, To develop againg management procedure to prevent moisture collection in man hole and to revise GALL AMP XI.E3

There are no Non-EQ inaccessible medium voltage cables WSLR at NMPNS. Therefore the propsed guidance is not applicable to NMPNS.

2.1.6.19 ISG-19A, Proposed Aging Management Program XI.M11-A, ‘Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure

Heads of Pressurized Water Reactors (PWRs Only), for License Renewal

This applies to PWR only Both units at NMPNS are boiling water reactors. Therefore, this issue is not applicable to NMPNS.

2.1.6.20 ISG-19B, Proposed Aging Management Program XI.M11-B, 'Nickel-Alloy Base-Metal Components and Welds in the Reactor Coolant Pressure Boundary,' for License Renewal

The NRC has not developed a position on this issue.

2.1.6.21 ISG-20, Revise aging management program XI.M19 to include steam generator tube integrity

This guidance applies to PWR only. Both units at NMPNS are boiling water reactors. Therefore, this issue is not applicable to NMPNS.

2.1.6.22 ISG-21, Revise Chapter IV tables, AMP XI.M9 and AMP XI.M16, to provide improved guidance on reactor vessel internals

The improved guidance on reactor vessel internals has been incorporated in the proposed draft LRGDs. Aging management of the NMPNS reactor vessel internals is addressed in B2.1.1.8. This program is consistent with latest industry and regulatory License Renewal precendence.

2.1.6.23 ISG-22, To address thermal aging embrittlement of CASS components

The NRC has determined that his ISG is not needed since the GALL adequately addresses this issue.

2.1.6.24 ISG-23, To provide guidance on how to handle replacement parts for 10 CFR 50.48

The NRC has not developed a position on this issue.

2.1.7 REFERENCES

2.1-1 NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, U.S. Nuclear Regulatory Commission*, July 2001.

2.1-2 Branch Technical Position (BTP) APCSB 9.5-1, Appendix A, *Guidelines for Fire Protection for Nuclear Power Plants*, August 23, 1976.

2.1-3 NEI 95-10, *Industry Guideline for Implementing the Requirements of 10 CFR Part 54 -The License Renewal Rule*, Rev. 5, Nuclear Energy Institute, March 2001.

2.1-4 Letter of March 10, 2003 from Peter J. Kang of the NRC to Alan Nelson of NEI and David Lochbaum of the Union of Concerned Scientists, *Subject: Interim Staff Guidance (ISG) - 5 on the Identification and Treatment of Electrical Fuse Holders for License Renewal.*

2.1-5 Letter of March 10, 2000 from Christopher I. Grimes of the NRC to Douglas J. Walters of NEI, *Subject: License Renewal Issue No. 98-12, Consumables.*

2.1-6 Letter of April 1, 2002 from David B. Matthews of the NRC to Alan Nelson of NEI and David Lochbaum of the Union of Concerned Scientists, *Subject: Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))*

2.2 PLANT LEVEL SCOPING RESULTS

Table 2.2-1 and Table 2.2-2 provide the results of the plant-level scoping for each of the systems, structures, and commodities for NMP1 and NMP2, respectively. For systems, structures, and commodities that are within scope of license renewal, the section numbers of this application, where these systems, structures, and commodities are described, are given in parentheses.

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Administration Building Heating, Ventilation, and Air Conditioning (HVAC) System (Section 2.3.3.A.1)	Yes	
Automatic Depressurization System (Section 2.3.2.A.1)	Yes	
Circulating Water System (Section 2.3.3.A.2)	Yes	Includes the following subsystems: • Screen Washing • Main Condenser Circulating Water • Hydraulic Fluid to Tempering Gate Actuator • Main Condenser Circulating Water Box Vents
City Water System (Section 2.3.3.A.3)	Yes	
Compressed Air Systems (Section 2.3.3.A.4)	Yes	Includes the following subsystems: • Breathing Air System • House Service Air System • Instrument Air System
Condensate and Condensate Transfer System (Section 2.3.4.A.1)	Yes	
Condenser Air Removal and Off-Gas System (Section 2.3.4.A.2)	Yes	
Containment Isolation Components	Yes	Primary Containment penetration sleeves are evaluated with the Primary Containment Structure (Section 2.4.A.1). Piping that penetrates containment is evaluated with its respective system along with containment isolation valves. Primary Containment electrical penetrations are addressed in the Containment Electrical Penetrations Commodity (Section 2.5.C.3).
Containment Spray System (Section 2.3.2.A.2)	Yes	

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Containment Systems (Section 2.3.3.A.5)	Yes	Includes the following subsystems: • Combustible Gas Control • Primary Containment Area Cooling • Containment Atmospheric Monitoring • Torus Temperature Monitoring • Torus Drain System • Integrated Leak Rate Monitoring
Control Rod Drive System (Section 2.3.1.A.5)	Yes	
Control Room HVAC System (Section 2.3.3.A.6)	Yes	
Core Spray System (Section 2.3.2.A.3)	Yes	
Diesel Generator Building Ventilation System (Section 2.3.3.A.7)	Yes	
Electric Steam Boiler System (Section 2.3.3.A.27)	Yes	
Emergency Cooling System (Section 2.3.2.A.4)	Yes	
Emergency Diesel Generator System (Section 2.3.3.A.8)	Yes	
Feedwater/High Pressure Coolant Injection System (Section 2.3.4.A.3)	Yes	
Fire Detection and Protection System (Section 2.3.3.A.9)	Yes	
Hydrogen Water Chemistry System (Section 2.3.3.A.10)	Yes	
Laboratory Systems	No	
Liquid Poison System (Section 2.3.3.A.11)	Yes	
Main Generator and Auxiliary System (Section 2.3.4.A.4)	Yes	
Main Steam System (Section 2.3.4.A.5)	Yes	
Main Turbine and Auxiliary System (Section 2.3.4.A.6)	Yes	Includes the following subsystems: • Main Turbine • Turbine-Generator Controls • Turbine Gland Sealing • Turbine Oil Storage & Purification • Turbine Supervisory Instruments • Turbine Protection System

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Makeup and Demineralizer System (Section 2.3.3.A.28)	Yes	
Miscellaneous Non Contaminated Vents and Drains System (Section 2.3.3.A.12)	Yes	
Moisture Separator Reheater Steam System (Section 2.3.4.A.7)	Yes	
Neutron Monitoring System (Section 2.3.3.A.13)	Yes	Includes the following subsystems: • Neutron Monitoring System – Intermediate Range • Neutron Monitoring System – Power Range • Neutron Monitoring System – Source Range • Neutron Monitoring System – Traversing Incore Probes
Process Radiation Monitoring System (Section 2.3.3.A.14)	Yes	
Radioactive Waste Disposal Building HVAC System (Section 2.3.3.A.15)	Yes	
Radioactive Waste System (Section 2.3.3.A.16)	Yes	Includes the following subsystems: • Gaseous Waste • Liquid Waste • Solid Waste • Non-Radioactive Roof and Floor Drains System
Reactor Building Closed Loop Cooling System (Section 2.3.3.A.17)	Yes	
Reactor Building HVAC System (Section 2.3.3.A.18)	Yes	

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Reactor Coolant Pressure Boundary Components In Other Systems (Section 2.3.1.A.6)	Yes	The Reactor Coolant Pressure Boundary Components of the following systems are evaluated with their assigned systems: • Core Spray System (Section 2.3.2.A.3) • Emergency Cooling System (Section 2.3.2.A.4) • Feedwater/High Pressure Coolant Injection System (Section 2.3.4.A.3) • Liquid Poison System (Section 2.3.3.A.11) • Main Steam System (Section 2.3.4.A.5) • Reactor Water Cleanup System (Section 2.3.3.A.19) • Sampling System (Section 2.3.3.A.20) • Shutdown Cooling System (Section 2.3.3.A.22)
Reactor Pressure Vessel (Section 2.3.1.A.1)	Yes	
Reactor Pressure Vessel Instrumentation System (Section 2.3.1.A.3)	Yes	
Reactor Pressure Vessel Internals (Section 2.3.1.A.2)	Yes	
Reactor Recirculation System (Section 2.3.1.A.4)	Yes	
Reactor Water Cleanup System (Section 2.3.3.A.19)	Yes	
Resin Transfer and Regeneration System	No	
Sampling System (Section 2.3.3.A.20)	Yes	
Sanitary Sewerage System	No	
Screen and Pumphouse Building HVAC System	No	
Service Water System (Section 2.3.3.A.21)	Yes	Includes the Emergency Service Water System
Shutdown Cooling System (Section 2.3.3.A.22)	Yes	
Spent Fuel Pool Filtering and Cooling System (Section 2.3.3.A.23)	Yes	
Technical Support Center HVAC System (Section 2.3.3.A.24)	Yes	
Turbine Building Closed Loop Cooling Water System (Section 2.3.3.A.25)	Yes	

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Turbine Building HVAC System (Section 2.3.3.A.26)	Yes	

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Electrical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
24V DC Electrical Distribution System (Section 2.5.A.1)	Yes	
125V DC Electrical Distribution System (Section 2.5.A.2)	Yes	
120V AC Electrical Distribution System (Section 2.5.A.3)	Yes	
345KV AC Electrical Distribution System	No	
480V AC Electrical Distribution System	No	
600V AC Electrical Distribution System (Section 2.5.A.4)	Yes	
4.16KV AC Electrical Distribution System (Section 2.5.A.5)	Yes	
115KV AC Electrical Distribution System (Section 2.5.A.6)	Yes	
Annunciator System	No	
Anticipated Transient Without Scram System (Section 2.5.A.7)	Yes	
Area Radiation Monitoring System	No	
Cables and Connectors Commodity (Section 2.5.C.1)	Yes	
Communications System (Section 2.5.A.8)	Yes	
Containment Electrical Penetrations Commodity (Section 2.5.C.3)	Yes	
Control Room Miscellaneous System	No	
Grounding System	No	
Non-Segregated/Switchyard Bus Commodity (Section 2.5.C.2)	Yes	
Plant Lighting System (Section 2.5.A.9)	Yes	
Plant Process Computer System (Section 2.5.A.10)	Yes	
Reactor Protection System (Section 2.5.A.11)	Yes	
Remote Shutdown System (Section 2.5.A.12)	Yes	
Safety Parameter Display System	No	
Security System	No	
Seismic Recording System	No	
Spares System	No	The Spares System encompasses breakers, fuses, indicators, and switches installed in plant systems as spares.
Switchyard Components Commodity (Section 2.5.C.4)	Yes	
Weather Station	No	

TABLE 2.2-1
NMP1 PLANT LEVEL SCOPING RESULTS

Structures and Component Supports		
System, Structure, or Commodity	**Within Scope of License Renewal?**	**Comments**
Component Supports Commodity (Section 2.4.C.1)	Yes	
Essential Yard Structures (Section 2.4.A.3)	Yes	
Fire Stops and Seals Commodity (Section 2.4.C.2)	Yes	
Fuel Handling System (Section 2.4.A.4)	Yes	
Material Handling System (Section 2.4.A.5)	Yes	
Non-essential Yard Structures	No	
Offgas Building (Section 2.4.A.6)	Yes	
Personnel/Equipment Access System (Section 2.4.A.7)	Yes	
Primary Containment Structure(Section 2.4.A.1)	Yes	
Radwaste Solidification and Storage Building (Section 2.4.A.8)	Yes	
Reactor Building (Section 2.4.A.2)	Yes	
Screen and Pumphouse Building (Section 2.4.A.9)	Yes	
Turbine Building (Section 2.4.A.10)	Yes	
Vent Stack (Section 2.4.A.11)	Yes	
Waste Disposal Building (Section 2.4.A.12)	Yes	
Yard System	No	The Yard system consists of a peripheral drain at the exterior of the buildings for the removal of ground water seepage. The system and components have no intended functions.

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Air Startup – Standby Diesel Generator System (Section 2.3.3.B.1)	Yes	
Alternate Decay Heat Removal System (Section 2.3.3.B.2)	Yes	
Automatic Depressurization System (Section 2.3.2.B.1)	Yes	
Auxiliary Boiler Room Ventilation System	No	
Auxiliary Boiler System (Section 2.3.3.B.33)	Yes	
Auxiliary Service Building HVAC System (Section 2.3.3.B.3)	Yes	
Cardox Fire Protection - Low Pressure Carbon Dioxide System	Yes	See Fire Detection and Protection System (Section 2.3.3.B.13)
Chemical Feed System – Acid	No	
Chemical Feed System – Hypochlorite	No	
Chilled Water Ventilation System	No	
Circulating Water System (Section 2.3.3.B.34)	Yes	
Compressed Air Systems (Section 2.3.3.B.5)	Yes	Includes the following subsystems: • Breathing Air System • Instrument Air System • Nitrogen System • Service Air System
Condensate System (Section 2.3.4.B.2)	Yes	Includes the following subsystems: • Auxiliary Condensate System • Condensate Booster Pump Lube Oil System • Condensate Demineralizer System • Condensate Demineralizer System – Mixed Bed • Condensate Makeup and Drawoff System
Containment Atmosphere Monitoring System (Section 2.3.3.B.6)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Containment Isolation Components	Yes	Primary Containment penetration sleeves are evaluated with the Primary Containment Structure (Section 2.4.B.1). Piping that penetrates containment is evaluated with its respective system along with containment isolation valves. Primary Containment electrical penetrations are addressed in the Containment Electrical Penetrations Commodity (Section 2.5.C.3).
Containment Leakage Monitoring System (Section 2.3.3.B.7)	Yes	
Control Building Chilled Water System (Section 2.3.3.B.8)	Yes	
Control Building HVAC System (Section 2.3.3.B.9)	Yes	
Control Rod Drive System (Section 2.3.1.B.5)	Yes	
Crack Arrest Verification System	No	
Decontamination System	No	
Diesel Generator Building Ventilation System (Section 2.3.3.B.10)	Yes	
Domestic Water System (Section 2.3.3.B.11)	Yes	
Drywell Cooling System	No	
Engine-Driven Fire Pump Fuel Oil System (Section 2.3.3.B.12)	Yes	
Extraction Steam and Feedwater Heater Drains System (Section 2.3.4.B.6)	Yes	
Feedwater System (Section 2.3.4.B.3)	Yes	Includes the following subsystems: • Feedwater Pump Drive Lube Oil System • Feedwater Pump Recirculation Balance Drum Leakoff System • Feedwater Pump Seals and Leakoff System
Fire Detection and Protection System (Section 2.3.3.B.13)	Yes	This system was created in the License Renewal Application to be consistent with NMP1.
Fire Detection System	Yes	See Fire Detection and Protection System (Section 2.3.3.B.13)

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Fire Protection Foam System	Yes	See Fire Detection and Protection System (Section 2.3.3.B.13)
Fire Protection Halon System	Yes	See Fire Detection and Protection System (Section 2.3.3.B.13)
Fire Protection Water System	Yes	See Fire Detection and Protection System (Section 2.3.3.B.13)
Floor and Equipment Drains System (Section 2.3.3.B.14)	Yes	Includes the following subsystems: • Miscellaneous Floor and Equipment Drains System • Radwaste Building Floor and Equipment Drains System • Reactor Building Floor Drains System • Reactor Building Equipment Drains System • Service Building Floor and Equipment Drains System • Standby Diesel Generator Building Floor and Equipment Drains System • Turbine Building Floor and Equipment Drains System • Turbine Plant Miscellaneous Drains System
Generator Standby Lube Oil System (Section 2.3.3.B.15)	Yes	Includes the Generator Standby Temperature System
Glycol Heating System	No	
High-Pressure Core Spray System (Section 2.3.2.B.3)	Yes	
Hot Water Heating System (Section 2.3.3.B.17)	Yes	
Hydro Pump System	No	
Hydrogen Recombiner System (Section 2.3.2.B.2)	Yes	
Hydrogen Water Chemistry System	No	
Loose Parts Monitoring System	No	
Low-Pressure Core Spray System (Section 2.3.2.B.4)	Yes	
Main Condenser Air Removal System (Section 2.3.4.B.1)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Main Generator System	No	Includes the following subsystems: • Excitation-Main Generator System (Cooling) • Excitation Main Generator System (Power Circuits) • Generator Hydrogen • Generator Carbon Dioxide System • Generator Isolation Phase Bus Cooling System • Generator Main Seal Oil System • Generator Stator Cooling Water System
Main Steam System (Section 2.3.4.B.4)	Yes	Includes the following subsystems: • Auxiliary Steam System • Main Steam Safety Valves Vents and Drains System
Makeup Water System (Section 2.3.3.B.18)	Yes	
Moisture Separator Reheat System (Section 2.3.4.B.5)	Yes	Includes the following subsystems: • Cold Reheat Steam • Hot Reheat Steam • Moisture Separator and Reheater Vents • Moisture Separator Vents and Drains System
Neutron Monitoring System (Section 2.3.3.B.19)	Yes	This system was created in the License Renewal Application to be consistent with NMP1.
Neutron Monitoring System – Intermediate Range	Yes	See Neutron Monitoring System (Section 2.3.3.B.19)
Neutron Monitoring System – Power Range	Yes	See Neutron Monitoring System (Section 2.3.3.B.19)
Neutron Monitoring System – Source Range	Yes	See Neutron Monitoring System (Section 2.3.3.B.19)
Neutron Monitoring System - Traversing Incore Probes	Yes	See Neutron Monitoring System (Section 2.3.3.B.19)
Offgas System	No	
Oxygen Feedwater Injection System	No	
Primary Containment Isolation System (Section 2.3.2.B.5)	Yes	The excess flow check valves on instrument lines that penetrate primary containment are considered part of the Primary Containment Isolation System.

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Primary Containment Purge System (Section 2.3.3.B.20)	Yes	
Process Sampling System (Section 2.3.3.B.21)	Yes	Includes the following subsystems: • Chemistry Lab Sampling System • Post-Accident Sampling System • Radwaste Building Sampling System • Reactor Plant Sampling System • Turbine Plant Sampling System
Radiation Monitoring System (Section 2.3.3.B.22)	Yes	
Radioactive Liquid Waste Management System (Section 2.3.3.B.36)	Yes	
Radioactive Solid Waste Management System	No	
Radwaste Building Ventilation System	No	
Reactor Building Closed-Loop Cooling Water System (Section 2.3.3.B.23)	Yes	Includes Drywell Coolers
Reactor Building HVAC System (Section 2.3.3.B.24)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Reactor Coolant Pressure Boundary Components In Other Systems (Section 2.3.1.B.6)	Yes	The Reactor Coolant Pressure Boundary Components of the following systems are evaluated with their assigned systems: • Feedwater System (Section 2.3.4.B.3) • Floor and Equipment Drains System (Section 2.3.3.B.14)[1] • High-Pressure Core Spray System (Section 2.3.2.B.3) • Low-Pressure Core Spray System (Section 2.3.2.B.4) • Main Steam System (Section 2.3.4.B.4) • Reactor Core Isolation Cooling System (Section 2.3.2.B.6) • Reactor Water Cleanup System (Section 2.3.3.B.25) • Residual Heat Removal System (Section 2.3.2.B.7) • Standby Liquid Control System (Section 2.3.3.B.31)
Reactor Core Isolation Cooling System (Section 2.3.2.B.6)	Yes	
Reactor Pressure Vessel (Section 2.3.1.B.1)	Yes	
Reactor Pressure Vessel Instrumentation System (Section 2.3.1.B.3)	Yes	
Reactor Pressure Vessel Internals (Section 2.3.1.B.2)	Yes	
Reactor Recirculation System (Section 2.3.1.B.4)	Yes	
Reactor Water Cleanup System (Section 2.3.3.B.25)	Yes	
Residual Heat Removal System (Section 2.3.2.B.7)	Yes	
Roof Drainage, Storm, and Waste Water System	No	
Roof Drains System (Section 2.3.3.B.37)	Yes	
Roof Drains System – Turbine Bldg	No	
Sanitary Plumbing and Drains System (Section 2.3.3.B.38)	Yes	

[1] This system includes the Reactor Building Floor Drains System which has components that ensure reactor vessel flange seal integrity.

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Seal Water System	No	
Service Building and Access Passageway Ventilation System	No	
Service Water Chemical Treatment System (Section 2.3.3.B.39)	Yes	
Service Water System (Section 2.3.3.B.27)	Yes	
Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.B.28)	Yes	
Standby Diesel Generator Fuel Oil System (Section 2.3.3.B.29)	Yes	
Standby Diesel Generator Protection (Generator) System (Section 2.3.3.B.30)	Yes	
Standby Gas Treatment System (Section 2.3.2.B.8)	Yes	
Standby Liquid Control System (Section 2.3.3.B.31)	Yes	
Traveling Screens Wash and Disposal System	No	
Turbine Building Closed-Loop Cooling Water System (Section 2.3.3.B.40)	Yes	
Turbine Building Ventilation System	No	
Turbine Main System (Section 2.3.4.B.7)	Yes	Includes the following subsystems: • Main Turbine System • Turbine Electric Hydraulic Oil and Controls System • Turbine Generator Gland Seal and Exhaust Steam • Turbine Generator Lube Oil Turning Gear and Seal System • Turbine Generator Oil Conditioner and Storage System • Turbine Main Alarms and Trips System • Turbine Main Lube Oil System • Turbine Main Supervisory Instrumentation System • Turbine Plant Equipment Vents System
Waste Oil Disposal System	No	
Water Treating – Copper Trol Cu-1 (Chemical Feed) System	No	
Water Treating – Dispersant (Chemical Feed) System	No	
Water Treatment System (Section 2.3.3.B.35)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Mechanical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Yard Structures Ventilation System (Section 2.3.3.B.32)	Yes	
Zinc Injection System	No	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Electrical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
13.8KV AC Electrical Distribution System (Section 2.5.B.1)	Yes	Includes the 13.8KV Normal and Standby AC Power Systems
4.16 KV AC Electrical Distribution System (Section 2.5.B.2)	Yes	Includes the 4.16KV Normal and Emergency AC Power Systems
Annunciator Input System	No	
Auxiliary Station Transformer System	No	
Battery-24V-Station System (Section 2.5.B.3)	Yes	
Cables and Connectors Commodity (Section 2.5.C.1)	Yes	
Common Electrical System (Section 2.5.B.4)	Yes	Includes the Control Room Complex
Communications Maintenance System	No	
Communications Paging System (Section 2.5.B.5)	Yes	
Communications Radio System	No	
Communications Sound Powered System	No	
Communications Telephone System (Section 2.5.B.6)	Yes	
Containment Electrical Penetrations Commodity (Section 2.5.C.3)	Yes	
Emergency DC Distribution System (Section 2.5.B.7)	Yes	
Emergency Uninterruptible Power Supplies (UPS) System (Section 2.5.B.8)	Yes	
Feedwater Control System (Section 2.5.B.9)	Yes	
Grounding System	No	
Heat Tracing System (Section 2.5.B.10)	Yes	
Information Handling Annunciator System (Section 2.5.B.11)	Yes	
Information Handling Security System	No	
Leak Detection System	No	
Lighting AC Auxiliary Boiler Room System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Control Room Main System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Cooling Tower and Pond Area System	No	
Lighting AC Diesel Generator Room System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Miscellaneous Buildings System	No	
Lighting AC Radwaste Building System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Reactor Building System	Yes	See Station Lighting System (Section 2.5.B.28)

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Electrical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Lighting AC Screenwell and Pumphouse System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Service Building System	Yes	See Station Lighting System (Section 2.5.B.28)
Lighting AC Switchyard or Substation including Control House System	No	
Lighting AC Turbine Area System	Yes	See Station Lighting System (Section 2.5.B.28)
Meteorological Monitoring System	No	
Motor Control Center-Emergency-System (Section 2.5.B.12)	Yes	
Non-Segregated/Switchyard Bus Commodity (Section 2.5.C.2)	Yes	
Normal AC High Voltage Distribution System (Section 2.5.B.13)	Yes	
Normal DC Distribution System (Section 2.5.B.14)	Yes	
Normal UPS System (Section 2.5.B.15)	Yes	
Plant Computer Network	No	
Power Outlet General Purpose 3 Phase System	No	
Process Computer System (Section 2.5.B.16)	Yes	Includes the Plant Data Historian System
Protection Cathodic System	No	
Reactor Manual Control/Rod Position Indication System	No	
Reactor Protection Motor Generator System (Section 2.5.B.17)	Yes	
Reactor Protection System (Section 2.5.B.18)	Yes	
Redundant Reactivity Control System (Section 2.5.B.19)	Yes	
Remote Shutdown System (Section 2.5.B.20)	Yes	
Reserve Station Service Transformers (Section 2.5.B.21)	Yes	
Seismic Monitoring System	No	
Standby and Emergency AC Distribution System (Section 2.5.B.22)	Yes	
Standby Diesel Generator Protection (Breaker) (Section 2.5.B.23)	Yes	
Startup Transient Analysis System (Section 2.5.B.24)	Yes	
Station Control Bus Nonvital AC Supply System (Section 2.5.B.25)	Yes	
Station Control Bus Nonvital Indication System (Section 2.5.B.26)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Electrical Systems		
System or Commodity	**Within Scope of License Renewal?**	**Comments**
Station Control Bus Vital AC Supply System (Section 2.5.B.27)	Yes	
Station Lighting System (Section 2.5.B.28)	Yes	This system is equivalent to the NMP1 Plant Lighting System.
Switchyard Components Commodity (Section 2.5.C.4)	Yes	
Switchyard System (Section 2.5.B.29)	Yes	Includes the following subsystems: • 115KV Switchyard (Scriba and NMP2) • 115KV Switchyard Substation (NMP2) • 115KV Switchyard Substation (Scriba) • 115KV Transmission Line • 345KV Switchyard • 345KV Switchyard Substation • 345KV Transmission Line • Main Transformer (Including Auxiliaries) • Station Protection Auxiliary Boiler Transformer • Station Protection Generator • Station Protection Main Transformer • Station Protection Normal Station Service Transformer • Station Protection Reserve Station Service Transformer • Station Protection Unit • Station Service Transformer Normal (Including Auxiliaries) • Synchronizing Main Generator • Synchronizing Station Service
Synchronizing – Diesel Generator (Section 2.5.B.30)	Yes	
Unit Substation Emergency AC Controls and Heater Supply System (Section 2.5.B.31)	Yes	
Unit Substation Emergency System (Section 2.5.B.32)	Yes	
Unit Substation System (Section 2.5.B.33)	Yes	
UPS Distribution System (Section 2.5.B.34)	Yes	
Welding Power System	No	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Structures and Component Supports		
System, Structure, or Commodity	**Within Scope of License Renewal?**	**Comments**
Auxiliary Service Building (Section 2.4.B.3)	Yes	
Component Supports Commodity (Section 2.4.C.1)	Yes	
Containment Auxiliary Structure – Superstructure	No	
Control Room Building (Section 2.4.B.4)	Yes	
Cooling Tower – Superstructure	No	
Diesel Generator Building (Section 2.4.B.5)	Yes	
Essential Yard Structures (Section 2.4.B.6)	Yes	
Fire Stops and Seals Commodity (Section 2.4.C.2)	Yes	
Fuel Handling System (Section 2.4.B.7)	Yes	Includes the following subsystems: • Fuel Nuclear Refueling System • Fuel Nuclear Storage System • Material Handling Fuel Storage Area
Main Stack (Section 2.4.B.8)	Yes	
Material Handling System (Section 2.4.B.9)	Yes	Includes material handling · equipment in the following areas: • Material Handling Miscellaneous Buildings • Material Handling Radwaste Building • Material Handling Turbine Area • Miscellaneous Cranes, Elevators, and Doors Systems • Reactor Building Cranes and Elevators
Miscellaneous Building – Superstructure	No	
Motor Operated Doors System (Section 2.4.B.10)	Yes	
Non-essential Yard Structures	No	
Primary Containment Structure (Section 2.4.B.1)	Yes	
Radwaste Building (Section 2.4.B.11)	Yes	
Reactor Building (Section 2.4.B.2)	Yes	Includes the following subsystems: • Fuel Nuclear Transfer System • Vents –Turbine and Reactor Building System
Screenwell Building (Section 2.4.B.12)	Yes	

TABLE 2.2-2
NMP2 PLANT LEVEL SCOPING RESULTS

Structures and Component Supports		
System, Structure, or Commodity	**Within Scope of License Renewal?**	**Comments**
Standby Gas Treatment Building (Section 2.4.B.13)	Yes	
Turbine Building (Section 2.4.B.14)	Yes	

2.3 SCOPING AND SCREENING RESULTS: MECHANICAL SYSTEMS

2.3.1 REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEMS

The NMP1 and NMP2 Reactor Vessel, Internals, and Reactor Coolant Systems are described in Sections 2.3.1.A and 2.3.1.B, respectively.

2.3.1.A NMP1 REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEMS

The NMP1 Reactor Vessel, Internals, and Reactor Coolant System are those systems designed to contain and support the nuclear fuel, contain the reactor coolant, and transfer the heat produced in the reactor to the steam and power conversion systems for the production of electricity. The following systems are included in this subsection:

- NMP1 Reactor Pressure Vessel (2.3.1.A.1)
- NMP1 Reactor Pressure Vessel Internals (2.3.1.A.2)
- NMP1 Reactor Pressure Vessel Instrumentation System (2.3.1.A.3)
- NMP1 Reactor Recirculation System (2.3.1.A.4)
- NMP1 Control Rod Drive System (2.3.1.A.5)
- NMP1 Reactor Coolant Pressure Boundary Components in other Systems (2.3.1.A.6)

2.3.1.A.1 NMP1 REACTOR PRESSURE VESSEL

System Description

The NMP1 Reactor Pressure Vessel (RPV) contains and supports the reactor core, reactor internals, and the reactor coolant/moderator. The RPV forms part of the reactor coolant pressure boundary and serves as a barrier against leakage of radioactive materials to the drywell.

The RPV is a vertical, cylindrical pressure vessel with hemispherical heads. The cylindrical shell and hemispherical heads are fabricated from low alloy carbon steel that is clad on the interior with stainless steel weld overlay. The top head is secured to the vessel with studs and nuts and includes two concentric seal-rings between the vessel head flange and the vessel flange to prevent reactor coolant leakage. The top head leak detection line taps off of the vessel head between the seal rings to detect leakage should the inner seal-ring fail. The top head also includes nine safety valves that prevent overpressurization of the RPV. The vessel shell and bottom head include penetration nozzles for the various systems that comprise the reactor coolant pressure boundary, including control rod drive housing and in-core instrumentation thimbles. The RPV is supported by a steel skirt welded to the bottom head. The base of the skirt is continuously supported by a ring girder and sole plate fastened to a concrete foundation, which carries the load to the reactor building foundation slab.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

RPV components subject to AMR include all of the components extending from the support skirt (lowest elevation) to the safety valves located on the top head (highest elevation), and outboard to (and including) the nozzle safe ends. The components subject to AMR for this system also include the NSR piping, fittings and valves associated with the top head leak detection line.

USAR Reference(s)

More information about the RPV can be found in USAR Sections I.A.4, V.B.2, and XVI.A.

License Renewal Drawings

Refer to USAR Figures IV-9, V-2, and V-3.

Components Subject to an AMR

The component types requiring an AMR for the RPV and their intended functions are shown in Table 2.3.1.A.1-1. The AMR results for these component types are provided in Table 3.1.2.A-1.

Table 2.3.1.A.1-1
NMP1 Reactor Pressure Vessel

Component Type	Intended Functions
Bottom Head	Pressure Boundary, Structural Support
Nozzles	Pressure Boundary
Nozzle Safe Ends	Pressure Boundary
Penetrations: • Core Differential Pressure • CRD Stub Tube • Flux Monitor • Instrumentation • Vessel Drain	Pressure Boundary
Support Skirt and Attachment Welds	Structural Support
Thermal Sleeves	Structural Support
Top Head	Pressure Boundary
Top Head (Closure Studs and Nuts)	Pressure Boundary
Top Head (Flanges)	Pressure Boundary
Top Head (Leak Detection Line)	Leakage Boundary (Spatial) Structural Integrity (Attached)
Top Head (Nozzles)	Pressure Boundary
Valves	Pressure Boundary Pressure Relief
	Leakage Boundary (Spatial) Structural Integrity (Attached)
Vessel Shell (Flange)	Pressure Boundary
Vessel Shells • Beltline • Lower Shell • Upper Nozzle Shell • Upper RPV Shell	Pressure Boundary, Structural Support
Vessel Shell Welds (including attachment welds)	Pressure Boundary, Structural Support

2.3.1.A.2 NMP1 REACTOR PRESSURE VESSEL INTERNALS

System Description

The NMP1 Reactor Pressure Vessel Internals provide support for the core and other internal components, maintain fuel configuration (coolable geometry) during normal operation and accident conditions, and provide reactor coolant flow distribution through the core.

The Reactor Pressure Vessel Internals consist of the components internal to the RPV. The main components are the reactor core (fuel, channels, control rods and instrumentation), core shroud (including the shroud support), core shroud stabilizers (shroud repair brackets and tie-rod assemblies), core support, topguide, control rod guide tubes, feedwater sparger, core spray spargers, liquid poison sparger, steam separator assembly, and steam dryer assembly. All of the vessel internals, except the shroud support assembly and springs in the fuel assemblies, are fabricated from stainless steel. The shroud support plates, spacers, tie rods, head bolts, and associated welds are inconel. The shroud support essentially sustains all of the vertical weight of the core structure (except the fuel assembly weights transmitted to the guide tube) and the steam separator assembly. Each guide tube, with its fuel support casting, bears the weight of four fuel assemblies and rests on a control rod drive housing welded to the stub tube mounted on the vessel bottom head.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

Reactor Pressure Vessel Internals components subject to AMR are located inside the RPV and extend from the bottom head to the top guide (excluding the fuel assemblies and control rods). Additionally, the steam dryer assembly is subject to an AMR.

USAR Reference(s)

More information about the Reactor Pressure Vessel Internals can be found in USAR Sections IV.B.7 and XVI.A.2.7.

License Renewal Drawings

Refer to USAR Figure IV-9.

Components Subject to an AMR

The component types requiring an AMR for the Reactor Pressure Vessel Internals and their intended functions are shown in Table 2.3.1.A.2-1. The AMR results for these component types are provided in Table 3.1.2.A-2.

Table 2.3.1.A.2-1
NMP1 Reactor Pressure Vessel Internals

Component Type	Intended Functions
CRD Assemblies (includes drive mechanism and housing)	Pressure Boundary, Structural Support
Control Rod Guide Tubes	Structural Support
Core Plates and Bolts	Structural Support
Core Shroud	Direct Flow, Structural Support
Core Shroud Head Bolts and Collars	Structural Support
Core Shroud Support Structures • Clamps • Core Plate Spacers • Support Plates • Support Rings • Support Welds • Tie Rod Assemblies	Structural Support
Core Spray Lines and Spargers	Direct Flow
	Structural Support
Incore Instrumentation Dry Tubes and Guide Tubes	Pressure Boundary
Liquid Poison Spray Line and Sparger	Direct Flow
Orificed Fuel Supports	Direct Flow, Structural Support
Steam Dryer Assembly	NSR Structural Support
Top Guide	Structural Support

2.3.1.A.3 NMP1 REACTOR PRESSURE VESSEL INSTRUMENTATION SYSTEM

System Description

The NMP1 Reactor Pressure Vessel Instrumentation System provides a means of monitoring and transmitting information concerning key reactor vessel operating parameters during normal and emergency operations. Instrumentation is installed to monitor reactor parameters and indicate these on meters, chart recorders and hydraulic indicator units located in the control room, remote shutdown panels and instrument rooms. The parameters monitored are reactor vessel temperature, water level and pressure, core differential pressure, core spray sparger break (differential pressure), and reactor safety valve position. This system also provides control signals to various systems which, in turn, initiate the appropriate actions required if the monitored parameter exceeds its desired setpoint. Systems receiving control signals from the Reactor Pressure Vessel Instrumentation System include the Reactor Protection, Automatic Depressurization, Anticipated Transient without Scram, Feedwater/HPCI, and Shutdown Cooling Systems. The top head leak detection line is addressed with the Reactor Pressure Vessel (section 2.3.1.A.1).

The Reactor Pressure Vessel Instrumentation System consists of piping, valves, and excess flow check valves that provide a fluid path from the RPV to various instrumentation.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portion of the Reactor Pressure Vessel Instrumentation System containing components subject to AMR begins immediately outboard of the reactor vessel penetration or nozzle, and ends at the first isolation valve (inclusive) at the connection to piping leading to the reactor building equipment drain tank. USAR Reference(s)

More information about the Unit 1 Reactor Pressure Vessel Instrumentation can be found in USAR Section VIII.C.2.1.

License Renewal Drawings

Components requiring an AMR for the Reactor Pressure Vessel Instrumentation System are highlighted on the following drawings:

- LR-18015-C, Revision 1, Reactor Vessel Instrumentation P&ID
- LR-18016-C, Sheet 1, Revision 1, Control Rod Drive P&ID
- LR-18016-C, Sheet 3, Revision 0, Reactor Vessel Water Level Reference Leg Backfill P&ID
- LR-18041-C, Sheet 7, Revision 1, Sampling Points Reactor Vessel Post Accident P&ID

- LR-69015-C, Sheet 1, Revision 0, Reactor Vessel Level, East Inst. Room El. 284'-0", Instrument Diagram
- LR-69015-C, Sheet 2, Revision 0, Reactor Vessel Level, West Inst. Room R.B.El. 284'-0", Instrument Diagram
- LR-69015-C, Sheet 2, Revision 0, Reactor Vessel Level, West Inst. Room R.B. El. 284'-0", Instrument Diagram
- LR-69015-C, Sheet 3, Revision 0, Reactor Vessel Level, (Wide Range) & Pressure, West Inst. Room R.B. El. 284'-0"
- LR-69017-C, Sheet 2, Revision 0, Emergency Condenser #11 Steam Flow, East Instrumentation Room, El. 284'-0" Reactor Building
- LR-69017-C, Sheet 3, Revision 0, Emergency Condenser #12 Steam Flow, West Instrumentation Room, El. 284'-0" Reactor Building
- LR-F69015C, Sheet 4, Revision 0, RV Level & Pressure West Inst. Room Instrument Diagram
- LR-F69015C, Sheet 5, Revision 0, RV Level & Pressure East Inst. Room Instrument Diagram
- LR-F69015C, Sheet 6, Revision 0, RV Level and Core dP Lower Inst. Room Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Reactor Pressure Vessel Instrumentation System and their intended functions are shown in Table 2.3.1.A.3-1. The AMR results for these component types are provided in Table 3.1.2.A-3.

Table 2.3.1.A.3-1
NMP1 Reactor Pressure Vessel Instrumentation System

Component Type	Intended Functions
Closure Bolting	Pressure Boundary
Condensing Pots	Pressure Boundary
Piping and Fittings	Pressure Boundary
Temperature Equalizing Columns	Pressure Boundary

Component Type	Intended Functions
Valves	Pressure Boundary

2.3.1.A.4 NMP1 REACTOR RECIRCULATION SYSTEM

System Description

The NMP1 Reactor Recirculation System is designed to provide a variable reactor coolant flow in order to control reactor power levels.

The Reactor Recirculation System is part of the reactor coolant pressure boundary and consists of five, external loops. Each loop draws suction from the downcomer annulus region of the RPV and discharges reactor coolant to the RPV lower plenum. Each loop consists of a variable speed pump, blocking valves, bypass line and associated instrumentation. The reactor recirculation pumps are controlled by separate variable frequency motor-generator sets, each having associated controls and instrumentation. Other systems that connect directly to the Reactor Recirculation System piping are the Emergency Cooling System, Shutdown Cooling System, Reactor Water Cleanup System and the Sampling System.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function(s) per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portion of the Reactor Recirculation System containing components subject to AMR includes the entire main Reactor Recirculation flow path, which begins at the suction nozzle to, and ends at the discharge nozzle of, each recirculation loop. Safety-related instrumentation piping and associated components connected to the recirculation loops are also subject to AMR. The components subject to an AMR for this system also include the NSR piping, fittings, valves in instrumentation loops.

USAR Reference(s)

More information about the Unit 1 Reactor Recirculation System can be found in USAR Sections V.B.3 and XVI.D.2.1.

License Renewal Drawings

Components requiring an AMR for the Reactor Recirculation System are highlighted on the following drawings:

- LR-18006-C, Sheet 1, Revision 1, Drywell & Torus, Isolation Valves P&ID
- LR-18020-C, Revision 1, Reactor Recirculation Loops
- LR-69020-C, Sheet 1, Revision 0, Reactor Recirc. Loop #11 Recirc. Flow, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 2, Revision 0, Reactor Recirc. Loop #12 Recirc. Flow, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 3, Revision 0, Reactor Recirc. Loop #13 Recirc. Flow, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 4, Revision 0, Reactor Recirc. Loop #14 Recirc. Flow, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 5, Revision 0, Reactor Recirc. Loop #15 Recirc. Flow, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 6, Revision 0, Reactor Recirc. Pump #11 Seal Press, Lower Inst. Room R.B. El. 237', Instrument Diagram
- LR-69020-C, Sheet 7, Revision 0, Reactor Recirc. Pump #12 Seal Press, Lower Inst. Room R.B. El. 237', Instrument Diagram
- LR-69020-C, Sheet 8, Revision 0, Reactor Recirc. Pump #13 Seal Press, Lower Inst. Room R.B. El. 237', Instrument Diagram
- LR-69020-C, Sheet 9, Revision 0, Reactor Recirc. Pump #14 Seal Press, Lower Inst. Room R.B. El. 237', Instrument Diagram
- LR-69020-C, Sheet 10, Revision 0, Reactor Recirc. Pump #15 Seal Press, Lower Inst. Room R.B. El. 237', Instrument Diagram

- LR-69020-C, Sheet 11, Revision 0, Rx Recirc. Loop #11 Pump Diff. Press, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 12, Revision 0, Rx Recirc. Loop #12 Pump Diff. Press, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 13, Revision 0, Rx Recirc. Loop #13 Pump Diff. Press, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 14, Revision 0, Rx Recirc. Loop #14 Pump Diff. Press, Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69020-C, Sheet 15, Revision 0, Rx Recirc. Loop #15 Pump Diff. Press, Instrument Room R.B. El. 237'-0", Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Reactor Recirculation System and their intended functions are shown in Table 2.3.1.A.4-1. The AMR results for these component types are provided in Table 3.1.2.A-4.

Table 2.3.1.A.4-1
NMP1 Reactor Recirculation System

Component Type	Intended Functions
Closure Bolting	Pressure Boundary
Flow Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Pump Seal Flanges	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.1.A.5 NMP1 CONTROL ROD DRIVE SYSTEM

System Description

The NMP1 Control Rod Drive (CRD) System is designed to change core reactivity by changing the position of control rods within the reactor core in response to manual control signals and to scram the reactor in response to manual or automatic signals. The system also provides high-pressure makeup to the RPV for a specified leakage of 25 gpm and to provide core cooling in the case of a small line break (up to 0.003 ft^3). The Control Rod Drive System also provides water to the reactor vessel level instrumentation reference leg backfill system and to the keep-fill system for the Emergency Cooling System.

The Control Rod Drive System consists of two redundant pumps, filters, strainers, control valves, hydraulic control units, control rod drive mechanisms, scram discharge volume, isolation valves and associated piping, valves, controls and instrumentation. The normal water supply for the pumps is the Condensate System with backup supplies available from the condensate storage tanks and the demineralized water storage tank. The discharge of each pump provides water directly to the reactor level instrumentation reference leg backfill system, Emergency Cooling Keep-Fill System and the control rod drive water filters. Downstream of the filters, through pressure and flow control valves, cooling water is provided to the control rod drive mechanisms, charging water is provided to the hydraulic control units, drive water is provided to the directional control valves, and the remaining water is provided directly to the RPV. Following a reactor scram, the exhaust water from the control rod drive mechanisms is collected in the scram discharge volume.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

The entire mechanical portion of the CRD System is subject to AMR. The portion of the CRD System containing components subject to AMR extends from the CRDs, to the piping for the hydraulic control units, and the isolation or check valves defining the safety related boundary. The components subject to an AMR for this system also include all NSR piping, fittings, filters, heat exchangers, pumps, tanks and valves.

<u>USAR Reference(s)</u>

More information about the Unit 1 CRD System can be found in USAR Sections <u>IV.B.6</u> and <u>X.C</u>.

License Renewal Drawings

Components requiring an AMR for the CRD System are highlighted on the following drawings:

- LR-18016-C, Sheet 1, Revision 1 Control Rod Drive P&ID
- LR-18016-C, Sheet 2, Revision 1, Control Rod Drive, Scram Dump Volume P&ID
- LR-18017-C, Sheet 1, Revision 1, Emergency Cooling System
- LR-45136-C, Sheet 1, Revision 0, Instrumentation, Valve Schedule
- LR-45136-C, Sheet 3A, Revision 0, Instrumentation, Valve Schedule

Components Subject to an AMR

The component types requiring an AMR for the CRD System and their intended functions are shown in Table 2.3.1.A.5-1. The AMR results for these component types are provided in Table 3.1.2.A-5.

Table 2.3.1.A.5-1
NMP1 Control Rod Drive System

Component Type	Intended Functions
Accumulators	Pressure Boundary
Closure Bolting	Pressure Boundary
Filters	Filter Pressure Boundary Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Tank	Structural Integrity (Attached)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.1.A.6 NMP1 REACTOR COOLANT PRESSURE BOUNDARY COMPONENTS IN OTHER SYSTEMS

In addition to the systems and components described in preceding subsections, reactor coolant pressure boundary components included with other plant systems are evaluated in NUREG-1801 as part of the reactor vessel, internals and reactor coolant system. In Section 2.3, the components requiring aging management review that have reactor coolant pressure boundary functions have been maintained in the plant system to which they are normally assigned, rather than grouped with other reactor coolant pressure boundary components in the reactor vessel, internals and reactor coolant system. Table 2.3.1.A.6-1 presents a list of plant systems having reactor coolant pressure boundary components evaluated in NUREG-1801 as part of the reactor vessel, internals and reactor coolant system.

For each of these systems, applicable system descriptions, USAR references, license renewal boundary diagram references, system intended functions, and complete listings of component groups requiring aging management review are presented in the application section indicated in Table 2.3.1.A.6-1. Aging management review results for these reactor coolant pressure boundary components are presented in their respective sections.

Table 2.3.1.A.6-1
NMP1 Application Sections Where Additional Reactor Coolant Pressure Boundary Components Are Evaluated

System Name	Other Application Section that Contain Reactor Coolant Pressure Boundary Components
NMP1 Core Spray System	Section 2.3.2.A.3
NMP1 Emergency Cooling System	Section 2.3.2.A.4
NMP1 Feedwater/High Pressure Coolant Injection System	Section 2.3.4.A.3
NMP1 Liquid Poison System	Section 2.3.3.A.11
NMP1 Main Steam System	Section 2.3.4.A.5
NMP1 Reactor Water Cleanup System	Section 2.3.3.A.19
NMP1 Sampling System	Section 2.3.3.A.20

NMP1 Shutdown Cooling System	Section 2.3.3.A.22

2.3.1.B NMP2 REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEMS

The NMP2 Reactor Vessel, Internals, and Reactor Coolant Systems are those systems designed to contain and support the nuclear fuel, contain the reactor coolant, and transfer the heat produced in the reactor to the steam and power conversion systems for the production of electricity. The following systems are included in this subsection:

- NMP2 Reactor Pressure Vessel (2.3.1.B.1)
- NMP2 Reactor Pressure Vessel Internals (2.3.1.B.2)
- NMP2 Reactor Pressure Vessel Instrumentation System (2.3.1.B.3)
- NMP2 Reactor Recirculation System (2.3.1.B.4)
- NMP2 Control Rod Drive System (2.3.1.B.5)
- NMP2 Reactor Coolant Pressure Boundary Components in Other Systems (2.3.1.B.6)

2.3.1.B.1 NMP2 REACTOR PRESSURE VESSEL

System Description

The NMP2 RPV contains and supports the reactor core, reactor internals, and the reactor coolant/moderator. The RPV forms part of the reactor coolant pressure boundary and serves as a barrier against leakage of radioactive materials to the drywell.

The NMP2 RPV is a vertical cylindrical pressure vessel of welded construction with hemispherical bottom and top heads. The cylindrical shell and top and bottom heads of the RPV are fabricated of low-alloy steel, the interior of which is clad with stainless steel weld overlay, except for the top head and nozzle and nozzle weld zones. The RPV top head is secured to the RPV by studs and nuts. The RPV flanges are sealed with two concentric metal seal rings designed to permit no detectable leakage through the inner or outer seal at any operating condition. The top head leak detection lines tap off of the vessel head between the seal rings to detect leakage should the inner seal-ring fail. The RPV is penetrated by various nozzles and penetrations. The CRD housings and in-core instrumentation thimbles are welded to the bottom head of the RPV. The concrete and steel vessel support pedestal is constructed as an integral part of the building foundation. Steel anchor bolts, set in the concrete, extend through the bearing plate and secure the flange of the reactor vessel support skirt to the bearing plate, and thus to the support pedestal.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

RPV components subject to AMR include all of the components extending from the support skirt (lowest elevation) to the top head (highest elevation), and outboard to (and including) the nozzle safe ends.

USAR Reference(s)

More information about the RPV can be found in USAR Section 5.3.

License Renewal Drawings

Refer to USAR Figure 5.3-4.

Components Subject to an AMR

The component types requiring an AMR for the RPV and their intended functions are shown in Table 2.3.1.B.1-1. The AMR results for these component types are provided in Table 3.1.2.B-1.

Table 2.3.1.B.1-1
NMP2 Reactor Pressure Vessel

Component Type	Intended Functions
Bottom Head	Pressure Boundary, Structural Support
Nozzles	Pressure Boundary
Nozzle Safe Ends	Pressure Boundary
Nozzle Thermal Sleeves	Structural Support
Penetrations: • Core Differential Pressure and Liquid Control • CRD Stub Tubes • Drain Lines • Incore Instruments • Instrumentation	Pressure Boundary
Support Skirt	Structural Support

Component Type	Intended Functions
Top Head and Nozzles	Pressure Boundary
Top Head (Closure Studs and Nuts)	Pressure Boundary
Top Head (Flanges)	Pressure Boundary
Top Head (Leak Detection Lines)	Pressure Boundary
Valves	Pressure Boundary
Vessel Shells (Flange)	Pressure Boundary, Structural Support
Vessel Shells • Lower Intermediate Shell • Lower Shell • Upper Intermediate Shell • Upper Shell	Pressure Boundary, Structural Support
Vessel Welds (including attachment welds)	Pressure Boundary, Structural Support

2.3.1.B.2 NMP2 REACTOR PRESSURE VESSEL INTERNALS

System Description

The NMP2 Reactor Pressure Vessel Internals provide support for the core and other internal components, maintain fuel configuration (coolable geometry) during normal operation and accident conditions, and provide reactor coolant flow distribution through the core.

The NMP2 Reactor Pressure Vessel Internals consists of the components internal to the RPV. The main structures within the RPV are the core (fuel, channels, control rods and instrumentation), the core support structure (including the shroud, top guide and core plate), the shroud head and steam separator assembly, the steam dryer assembly, the feedwater spargers, the core spray spargers, and the jet pumps. Except for the Zircaloy used in the fuel assemblies, reactor internals are stainless steel or other corrosion-resistant alloys. The fuel assemblies (which include fuel rods and channel), control rods, in-core instrumentation, shroud head and steam separator assembly, and steam dryers are removable when the reactor vessel is opened for refueling or maintenance.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

Reactor Pressure Vessel Internals components subject to AMR are located inside the RPV and extend from the bottom head to the top guide (excluding the fuel assemblies and control rods). Additionally, the steam dryer assembly is subject to an AMR.

USAR Reference(s)

More information about the Reactor Pressure Vessel Internals can be found in USAR Sections 4.1.2 and 3.9B.5.

License Renewal Drawings

Refer to USAR Figure 5.3-4.

Components Subject to an AMR

The component types requiring an AMR for the Reactor Pressure Vessel Internals and their intended functions are shown in Table 2.3.1.B.2-1. The AMR results for these component types are provided in Table 3.1.2.B-2.

Table 2.3.1.B.2-1
NMP2 Reactor Pressure Vessel Internals

Component Type	Intended Functions
Access Hole Covers	Pressure Boundary
CRD Assemblies (includes drive mechanism and housing)	Pressure Boundary, Structural Support
Control Rod Guide Tubes	Pressure Boundary, Structural Support
Core Plate, Bolts, and Supports	Structural Support
Core Shroud	Direct Flow, Structural Support
Core Shroud Head Bolts	Structural Support
Core / Shroud Support Structures • Bolts • Brackets • Clamps • Keepers • Supports	Structural Support
Core Spray Lines and Spargers	Direct Flow Pressure Boundary
Differential Pressure Liquid Control Line	Pressure Boundary
Flanges	Structural Support

Component Type	Intended Functions
Incore Housings	Pressure Boundary, Structural Support
Incore Instrumentation Dry Tubes	Pressure Boundary
Jet Pump Assemblies	Direct Flow
	Structural Support
LPCI Couplings	Direct Flow, Pressure Boundary
Orificed Fuel Supports	Direct Flow, Structural Support
Peripheral Fuel Supports	Structural Support
Power Range Detector Assemblies	Pressure Boundary
Spray Nozzles	Direct Flow, Pressure Boundary
Steam Dryer Assembly	NSR Structural Support
Top Guide and Supports	Structural Support

2.3.1.B.3 NMP2 REACTOR PRESSURE VESSEL INSTRUMENTATION SYSTEM

System Description

The NMP2 Reactor Pressure Vessel Instrumentation System provides a means of monitoring and transmitting information concerning key reactor vessel operating parameters during normal and emergency operations. Instrumentation is installed to monitor reactor parameters and indicate these on meters and chart recorders in the control room and remote shutdown panels. The parameters monitored are reactor vessel temperature, water level and pressure, core flow and core plate differential pressure. This system also provides control signals to various systems which, in turn, initiate the appropriate actions required if the monitored parameter exceeds its desired setpoint. Systems receiving control signals from the Reactor Pressure Vessel Instrumentation System include Reactor Protection, Primary Containment Isolation, Automatic Depressurization, Feedwater Control, Reactor Recirculation Flow Control, Redundant Reactivity Control and Residual Heat Removal (Shutdown Cooling mode) systems.

The Reactor Pressure Vessel Instrumentation System consists of piping, valves and restricting orifices that provide a fluid path from the RPV to various instrumentation.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portion of the Reactor Pressure Vessel Instrumentation System containing components subject to AMR begins immediately outboard of the reactor vessel instrumentation nozzles, and ends at connections to other systems such as High Pressure Core Spray (Section 2.3.2.B.3) and Control Rod Drive (Section 2.3.1.B.5). The components subject to an AMR for this system also include the NSR piping and fittings in the interface line to the Post Accident Sampling subsystem included in the Process Sampling System (Section 2.3.3.B.21).

USAR Reference(s)

More information about the Unit 2 Reactor Pressure Vessel Instrumentation System can be found in USAR Sections 4.4.6 and 5.1.

License Renewal Drawings

Components requiring an AMR for the Reactor Pressure Vessel Instrumentation System are highlighted on the following drawings:

- LR-028, Sheet A, Revision 1, Nuclear Boiler and Process Instrumentation P&ID
- LR-028, Sheet B, Revision 0, Nuclear Boiler and Process Instrumentation P&ID
- LR-028, Sheet C, Revision 1, Nuclear Boiler and Process Instrumentation P&ID

Components Subject to an AMR

The component types requiring an AMR for the Reactor Pressure Vessel Instrumentation System and their intended functions are shown in Table 2.3.1.B.3-1. The AMR results for these component types are provided in Table 3.1.2.B-3.

Table 2.3.1.B.3-1
NMP2 Reactor Pressure Vessel Instrumentation System

Component Type	Intended Functions
Closure Bolting	Pressure Boundary
Condensing Chambers	Pressure Boundary
Piping and Fittings	Structural Integrity (Attached) Pressure Boundary
Radiation Collars	Shielding
Restriction Orifices	Pressure Boundary
Vacuum Breakers	Pressure Boundary
Valves	Pressure Boundary

2.3.1.B.4 NMP2 REACTOR RECIRCULATION SYSTEM

System Description

The NMP2 Reactor Recirculation System is designed to provide a variable reactor coolant flow in order to control reactor power levels.

The NMP2 Reactor Recirculation System is part of the reactor coolant pressure boundary and consists of two external loops. Each loop contains a pump, flow control valve, two blocking valves, piping and associated controls and instrumentation. Coolant flow is from the RPV annulus region, through a recirculation pump and flow control valve, into an external manifold from which individual recirculation inlet lines are routed to the jet pump risers within the RPV. The jet pumps are evaluated as part of the Reactor Pressure Vessel Internals. The recirculation pumps operate at two speeds with power coming from either the low frequency motor generator set (25 percent) or a 60-Hz power source (100 percent). The flow control valves are controlled by two separate sets of control system components, one for each valve.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portion of the Reactor Recirculation system containing components subject to AMR includes the entire main Reactor Recirculation flow path, which begins at the suction nozzle to, and ends at the discharge manifold nozzles to the jet pump risers of, each recirculation loop. Safety-related instrumentation piping and associated components connected to the recirculation loops are also subject to AMR. The components subject to an AMR for this system also include the NSR piping, fittings, and valves associated with system instrumentation, hydraulic valve control and pump seal supply from the Control Rod Drive System (Section 2.3.1.B.5)USAR Reference(s)

More information about the Unit 2 Reactor Recirculation System can be found in USAR Sections 5.4.1 and 7.7.1.2.

License Renewal Drawings

Components requiring an AMR for the Reactor Recirculation System are highlighted on the following drawings:

- LR-029, Sheet A, Revision 1, Reactor Recirculation System P&ID
- LR-029, Sheet B, Revision 1, Reactor Recirculation System P&ID
- LR-029, Sheet C, Revision 1, Reactor Recirculation System P&ID
- LR-031, Sheet A, Revision 1, Residual Heat Removal System P&ID

Components Subject to an AMR

The component types requiring an AMR for the Reactor Recirculation System and their intended functions are shown in Table 2.3.1.B.4-1. The AMR results for these component types are provided in Table 3.1.2.B-4.

Table 2.3.1.B.4-1
NMP2 Reactor Recirculation System

Component Type	Intended Functions
Closure Bolting	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Radiation Collars	Shielding
Restriction Orifices	Throttle, Pressure Boundary
Seal Coolers	Heat Transfer, Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.1.B.5 NMP2 CONTROL ROD DRIVE SYSTEM

System Description

The NMP2 Control Rod Drive System is designed to change core reactivity by changing the position of control rods within the reactor core in response to manual control signals and to scram the reactor in response to manual or automatic signals. The system also provides water to the nuclear boiler instrumentation system reference leg backfill injection lines and the Reactor Water Cleanup and Reactor Recirculation pump seals.

The Control Rod Drive System consists of two redundant pumps, filters, control valves, hydraulic control units, control rod drive mechanisms, scram discharge volume and associated piping, valves, controls and instrumentation. The normal water supply for the pumps is the Condensate System with a backup supply from the condensate storage tank. The discharge of each pump provides water to the nuclear boiler instrumentation system reference leg backfill injection lines, Reactor Water Cleanup and Reactor Recirculation pump seals and through filters and pressure and control valves to several portions of the system. These portions are cooling water to the control rod drive mechanisms, charging water to the hydraulic control units and drive water to the directional control valves. Following a reactor scram, the exhaust water from the control rod drive mechanisms is collected in the scram discharge volume.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portion of the CRD System containing components subject to AMR begins at the supply connection with the Condensate Makeup and Drawoff System [see Condensate System (Section 2.3.4.B.2)], continues through the pump suction piping and pump discharge piping, and through the CRDs. Branch piping supplying the Reactor Water Cleanup pump seals and Reactor Recirculation pump seals, and Reactor Pressure Vessel Instrumentation System (Section 2.3.1.B.3), also contains components subject to AMR. The components subject to an AMR for this system also include the NSR filters, flow elements, flow indicators, flow orifices, piping and fittings, pumps and valves in the system.

USAR Reference(s)

More information about the Unit 2 CRD System can be found in USAR Section 4.6.1.

License Renewal Drawings

Components requiring an AMR for the CRD System are highlighted on the following drawings:

- LR-004, Sheet A, Revision 1, Condensate Storage and Transfer P&ID

- LR-028, Sheet A, Revision 1, Nuclear Boiler and Process Instrumentation P&ID

- LR-030, Sheet A, Revision 0, Control Rod Drive Hydraulic System P&ID

- LR-030, Sheet B, Revision 0, Control Rod Drive Hydraulic System P&ID

- LR-030, Sheet C, Revision 1, Control Rod Drive Hydraulic System P&ID

Components Subject to an AMR

The component types requiring an AMR for the CRD System and their intended functions are shown in Table 2.3.1.B.5-1. The AMR results for these component types are provided in Table 3.1.2.B-5.

Table 2.3.1.B.5-1
NMP2 Control Rod Drive System

Component Type	Intended Functions
Accumulators	Pressure Boundary
Closure Bolting	Pressure Boundary
CRD Hydraulic Control Units	Pressure Boundary
Filters	Leakage Boundary (Spatial)
Flow Elements	Leakage Boundary (Spatial)
Flow Indicators	Leakage Boundary (Spatial)
Flow Orifices	Throttle Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Rupture Discs	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.1.B.6 NMP2 REACTOR COOLANT PRESSURE BOUNDARY COMPONENTS IN OTHER SYSTEMS

In addition to the systems and components described in preceding subsections, reactor coolant pressure boundary components included with other plant systems are evaluated in NUREG-1801 as part of the reactor vessel, internals and reactor coolant system. In Section 2.3, the components requiring aging management review that have reactor coolant pressure boundary functions have been maintained in the plant system to which they are normally assigned, rather than grouped with other reactor coolant pressure boundary components in the reactor vessel, internals and reactor coolant system. Table 2.3.1.B.6-1 presents a list of plant systems having reactor coolant pressure boundary components evaluated in NUREG-1801 as part of the reactor vessel, internals and reactor coolant system.

For each of these systems, applicable system descriptions, USAR references, license renewal boundary diagram references, system intended functions, and complete listings of component groups requiring aging management review are presented in the application section indicated in Table 2.3.1.B.6-1. Aging management review results for these reactor coolant pressure boundary components are presented in their respective sections.

Table 2.3.1.B.6-1
NMP2 Application Sections Where Additional Reactor Coolant Pressure Boundary Components Are Evaluated

System Name	Other Application Sections That Contain Reactor Coolant Pressure Boundary Components
NMP2 Feedwater System	Section 2.3.4.B.3
NMP2 Floor and Equipment Drains System	Section 2.3.3.B.14
NMP2 High-Pressure Core Spray System	Section 2.3.2.B.3
NMP2 Low-Pressure Core Spray System	Section 2.3.2.B.4
NMP2 Main Steam System	Section 2.3.4.B.4
NMP2 Reactor Core Isolation Cooling System	Section 2.3.2.B.6
NMP2 Reactor Water Cleanup System	Section 2.3.3.B.25
NMP2 Residual Heat Removal System	Section 2.3.2.B.7
NMP2 Standby Liquid Control System	Section 2.3.3.B.31

2.3.2 ENGINEERED SAFETY FEATURES SYSTEMS

The NMP1 and NMP2 Engineered Safety Features (ESF) Systems are described in Sections 2.3.2.A and 2.3.2.B, respectively.

2.3.2.A NMP1 ENGINEERED SAFETY FEATURES SYSTEMS

NMP1 ESF Systems consist of systems and components designed to function under accident conditions to minimize the severity of an accident or to mitigate the consequences of an accident. In the event of a Loss-of-Coolant Accident (LOCA), the ESF Systems provide emergency coolant to assure structural integrity of the core, to maintain the integrity of the containment, or to reduce the concentration of fission products expelled to the Reactor Building atmosphere. The following systems are included in this subsection:

- NMP1 Automatic Depressurization System (Section 2.3.2.A.1)
- NMP1 Containment Spray System (Section 2.3.2.A.2)
- NMP1 Core Spray System (Section 2.3.2.A.3)
- NMP1 Emergency Cooling System (Section 2.3.2.A.4)

Note: NUREG-1801 also lists the High Pressure Coolant Injection (HPCI) System in the Emergency Core Cooling System Section (V.D). The NMP1 USAR Section VII.I.1 states that the HPCI System is not an ESF System and that the HPCI System is an operating mode of the Feedwater System. Further information about the HPCI System can be found in the Feedwater/High Pressure Coolant Injection (FW/HPCI) System (Section 2.3.4.A.3). Additionally, the USAR lists the Emergency Ventilation System, the Combustible Gas Control System, and the Liquid Poison System in the Engineering Safeguards Section (Sections VII.G, VII.H, and VII.C respectively). The Emergency Ventilation System is evaluated as part of the Reactor Building HVAC System (Section 2.3.3.A.18). The Combustible Gas Control System is evaluated as part of the Containment Systems (Section 2.3.3.A.5). The Liquid Poison is evaluated in (Section 2.3.3.A.11) as an Auxiliary System consistent with the characterization of Auxiliary Systems in NUREG-1801.

2.3.2.A.1 NMP1 AUTOMATIC DEPRESSURIZATION SYSTEM

System Description

The purpose of the NMP1 Automatic Depressurization System is to reduce Reactor Pressure Vessel (RPV) pressure for small line breaks when there is no feedwater flow. When RPV pressure is reduced to the low pressure permissive setpoint of the Core Spray System (Section 2.3.2.A.3), sufficient inventory makeup is available to maintain adequate core cooling.

The Automatic Depressurization System consists of six solenoid-operated relief valves that discharge to the torus. Three relief valves are located on each main steam line. The discharge piping also contains vacuum breakers. The Automatic Depressurization System instrumentation and controls are included within this system.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Automatic Depressurization System can be found in USAR Sections VII.A.2 and X.10B.5.6.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

The component types subject to an AMR that perform the system intended functions for the Automatic Depressurization System are part of, and evaluated in, the Main Steam System (Section 2.3.4.A.5). No additional components within the Automatic Depressurization System are subject to aging management review.

2.3.2.A.2 NMP1 CONTAINMENT SPRAY SYSTEM

System Description

The purpose of the NMP1 Containment Spray System is to prevent containment pressure and temperature from exceeding its design values following loss of coolant accidents.

The Containment Spray System consists of two redundant loops that take suction from the torus and discharge to one of two drywell spargers and a torus sparger. Each loop consists of two redundant trains. Each train consists of a suction header, pump, heat exchanger, common test return line and associated piping and valves. The heat exchangers are cooled by a dedicated containment spray raw water pump that takes suction from the circulating water intake tunnel and discharges to the discharge tunnel. Each raw water train consists of a pump, strainer and associated piping and valves. The Containment Spray System instrumentation and controls are included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR extend from the torus to the spray nozzles located inside containment and also include the raw water cooling system for the Containment Spray heat exchangers. This includes the NSR piping, fittings, and valves within the system boundaries.

USAR Reference(s)

More information about the Containment Spray System can be found in USAR Section VII.B.

License Renewal Drawings

Components requiring an AMR for the Containment Spray System are highlighted on the following drawings:

- LR-18012-C, Sheet 1, Revision 1, Reactor Containment, Spray Raw Water System
- LR-18012-C, Sheet 2, Revision 1, Reactor Containment, Spray System
- LR-18022-C, Sheet 1, Revision 1, Service Water, Reactor & Turbine Bldgs.
- LR-69012-C, Sheet 3, Revision 0, Primary & Secondary Cont. Spray Press., Reactor Building 281'-0", Instrument Diagram
- LR-69012-C, Sheet 4, Revision 0, Containment Spray Pumps #111 & #121, Northwest Corner Reactor Build. El. 198'-0", Instrument Diagram
- LR-69012-C, Sheet 5, Revision 0, Containment Spray Pumps #112 & #122, Northeast Corner Reactor Build. El. 198'-0", Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Containment Spray System and their intended functions are shown in Table 2.3.2.A.2-1. The AMR results for these component types are provided in Table 3.2.2.A-1.

Table 2.3.2.A.2-1
NMP1 Containment Spray System

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Flow Orifices	Throttle, Pressure Boundary
	Pressure Boundary
Heat Exchangers	Heat Transfer, Pressure Boundary
Nozzles	Spray
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Pumps	Pressure Boundary
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.2.A.3 NMP1 CORE SPRAY SYSTEM

System Description

The purpose of the NMP1 Core Spray System is to prevent fuel damage following any postulated LOCA. For small line breaks, the Automatic Depressurization System (Section 2.3.2.A.1) is used in conjunction with the Core Spray System to prevent fuel damage.

The Core Spray System consists of two redundant loops that take suction from the torus and discharge to one of two spargers inside the RPV. Each loop consists of two redundant trains. Each train consists of a suction strainer, core spray pump, core spray topping (booster) pump, associated piping and valves and a common discharge header to the sparger. A test return line, high-point vents and keep full system are also provided for each loop. A seal water supply line originates from the topping pump discharge header in each core spray loop to pressurize and provide a supply of seal water to the Shutdown Cooling System (Section 2.3.3.A.22) isolation valves. Core Spray System instrumentation and controls are included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR extend from the torus to the inlet nozzles on the RPV. This includes the NSR accumulators, level gauges, piping and fittings, and valves within the system boundaries.

USAR Reference(s)

More information about the Core Spray System can be found in USAR Section VII.A.

License Renewal Drawings

Components requiring an AMR for the Core Spray System are highlighted on the following drawings:

- LR-69007C, Sheet 5, Revision 0, Core Spray Pump #121 & #122 Suction Press. Instrument Diagram
- LR-69007C, Sheet 6, Revision 0, Core Spray Pump #111 & #112 Suction Press. Instrument Diagram
- LR-18007-C, Sheet 1, Revision 1, Reactor Core Spray
- LR-18007-C, Sheet 2, Revision 1, Reactor Core Spray
- LR-18012-C, Sheet 1, Revision 1, Reactor Containment, Spray Raw Water System

Components Subject to an AMR

The component types requiring an AMR for the Core Spray System and their intended functions are shown in Table 2.3.2.A.3-1. The AMR results for these component types are provided in Table 3.2.2.A-2.

Table 2.3.2.A.3-1
NMP1 Core Spray System

Component Type	Intended Functions
Accumulators	Structural Integrity (Attached)
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Flow Orifices	Throttle, Pressure Boundary
Heat Exchangers	Heat Transfer, Pressure Boundary
Level Gauges	Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary

Component Type	Intended Functions
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.2.A.4 NMP1 EMERGENCY COOLING SYSTEM

System Description

The purpose of the NMP1 Emergency Cooling System is to remove decay heat from the RPV fuel in the event that RPV feedwater capability is lost and the main condenser is not available. This system serves as an alternate heat sink when the RPV is isolated from its normal heat sink (i.e., the main condenser).

The Emergency Cooling System consists of two redundant loops connected to the RPV on the steam supply side and to the Reactor Recirculation System on the condensate return side. Each loop consists of two condensers (heat exchangers), a makeup water storage tank, a keep full system and associated piping and valves. Steam side vents are connected to each loop that removes non-condensable gases to the main steam lines or torus (for accident conditions). Drain lines are also provided on each loop's steam lines. Emergency Cooling System instrumentation and controls, including area temperature monitoring, are included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR extend from the system connections with the Reactor Vessel to the system connections with the Reactor Recirculation System. Included are the system piping, fittings, valves, emergency condensers, makeup tanks, vents, and drains. The components subject to an AMR for this system also include the NSR piping, fittings, and valves within the system boundaries.

USAR Reference(s)

More information about the Emergency Cooling System can be found in USAR Section V.E.

License Renewal Drawings

Components requiring an AMR for the Emergency Cooling System are highlighted on the following drawings:

- LR-18017-C, Sheet 1, Revision 1, Emergency Cooling System
- LR-18048-C, Revision 1, Condensate Transfer System, Pump Discharge

Components Subject to an AMR

The component types requiring an AMR for the Emergency Cooling System and their intended functions are shown in Table 2.3.2.A.4-1. The AMR results for these component types are provided in Table 3.2.2.A-3.

Table 2.3.2.A.4-1
NMP1 Emergency Cooling System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Heat Exchangers	Heat TransferPressure Boundary
Level Gauges	Pressure Boundary
Piping and Fittings	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Tanks	Pressure Boundary
Valves	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.2.B NMP2 ENGINEERED SAFETY FEATURES SYSTEMS

NMP2 ESF Systems consist of systems and components designed to function under accident conditions to minimize the severity of an accident or to mitigate the consequences of an accident. In the event of a LOCA, the

ESF Systems provide emergency coolant to assure structural integrity of the core, to maintain the integrity of the containment, or to reduce the concentration of fission products expelled to the Reactor Building atmosphere. The following systems are included in this subsection:

- NMP2 Automatic Depressurization System (Section 2.3.2.B.1)
- NMP2 Hydrogen Recombiner System (Section 2.3.2.B.2)
- NMP2 High Pressure Core Spray System (Section 2.3.2.B.3)
- NMP2 Low Pressure Core Spray System (Section 2.3.2.B.4)
- NMP2 Primary Containment Isolation System (Section 2.3.2.B.5)
- NMP2 Reactor Core Isolation Cooling System (Section 2.3.2.B.6)
- NMP2 Residual Heat Removal System (Section 2.3.2.B.7)
- NMP2 Standby Gas Treatment System (Section 2.3.2.B.8)

2.3.2.B.1 NMP2 AUTOMATIC DEPRESSURIZATION SYSTEM

System Description

The purpose of the NMP2 Automatic Depressurization System is to reduce reactor pressure following small line breaks in the event of High Pressure Core Spray (HPCS) failure (Section 2.3.2.B.3). When reactor vessel pressure is reduced to within the capacity of the low-pressure systems [Low Pressure Coolant Injection (described in the Residual Heat Removal System, Section 2.3.2.B.7) and Low Pressure Core Spray System (Section 2.3.2.B.4)], these systems provide inventory makeup to maintain acceptable post-accident temperatures.

The Automatic Depressurization System employs seven nuclear steam supply system pressure relief valves to relieve high-pressure steam to the suppression pool. Automatic Depressurization System instrumentation and controls are also included with this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Automatic Depressurization System can be found in USAR Sections 1.2.9.8, 6.3.1.2.4, 6.3.2.2.2, 7.3.1.1.1.2, and 9.3.1.4

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

The component types subject to an AMR that perform the system intended functions for the Automatic Depressurization System are part of, and evaluated in, the Main Steam System (Section 2.3.4.B.4). No additional components within the Automatic Depressurization System are subject to aging management review.

2.3.2.B.2 NMP2 HYDROGEN RECOMBINER SYSTEM

System Description

The purpose of the NMP2 Hydrogen Recombiner System is to process the hydrogen and oxygen released to the primary containment during a LOCA.

The Hydrogen Recombiner System takes suction from the drywell and suppression pool, recombines the hydrogen and oxygen gases, and returns the resulting water vapor and other gases to the suppression pool. The system consists of suction piping, two redundant recombiner units, and discharge piping and isolation valves. Each recombiner unit consists of a blower, electric heater, reaction chamber and water spray coolers. Hydrogen Recombiner System instrumentation and controls are also included in this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR extend from the recombiner unit to the primary containment drywell and suppression chamber. The components subject to an AMR for this system also include the NSR piping, fittings, and valves from the SR/NSR interface up to, and including, the first seismic anchor.

USAR Reference(s)

More information about the Hydrogen Recombiner System can be found in USAR Section 6.2.5.2.2.

License Renewal Drawings

Components requiring an AMR for the Hydrogen Recombiner System are highlighted on the following drawings:

- LR-062, Sheet A, Revision 1, DBA Hydrogen Recombiner
- LR-062, Sheet B, Revision 0, DBA Hydrogen Recombiner

Components Subject to an AMR

The component types requiring an AMR for the Hydrogen Recombiner System and their intended functions are shown in Table 2.3.2.B.2-1. The AMR results for these component types are provided in Table 3.2.2.B-1.

Table 2.3.2.B.2-1
NMP2 Hydrogen Recombiner System

Component Type	Intended Functions
Blowers	Pressure Boundary
Bolting	Pressure Boundary Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Hydrogen Recombiners	Pressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.2.B.3 NMP2 HIGH PRESSURE CORE SPRAY SYSTEM

System Description

The purpose of the NMP2 High Pressure Core Spray (HPCS) System is to maintain RPV coolant inventory after small breaks that do not depressurize the RPV. The HPCS System also provides spray cooling heat transfer during breaks in which core uncovery is calculated.

The HPCS System consists of two redundant suction lines, a single pump, discharge piping, isolation valves, and two spargers, with nozzles, inside the RPV. One suction line (primary) is from a Condensate Storage Tank while the other line is from the suppression pool. A low flow bypass line to the suppression pool and a test return line to the Condensate Storage Tanks (CSTs) is also included in the HPCS system. HPCS System instrumentation and controls are also included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

The components subject to an AMR extend from the suppression pool and one of the CSTs to the HPCS nozzle on the RPV. The components subject to an AMR for this system also include the NSR piping, fittings, and valves in the system vent and drain lines and test return line up to the Condensate Storage Tank Building.

USAR Reference(s)

More information about the HPCS System can be found in USAR Sections 6.3.1.2.1 and 6.3.2.2.1.

License Renewal Drawings

Components requiring an AMR for the HPCS System are highlighted on the following drawings:

- LR-033, Sheet A, Revision 1, High Pressure Core Spray System
- LR-033, Sheet B, Revision 1, High Pressure Core Spray System

Components Subject to an AMR

The component types requiring an AMR for the High Pressure Core Spray System and their intended functions are shown in Table 2.3.2.B.3-1. The AMR results for these component types are provided in Table 3.2.2.B-2.

Table 2.3.2.B.3-1
NMP2 High Pressure Core Spray System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Restriction Orifices	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.2.B.4 NMP2 LOW PRESSURE CORE SPRAY SYSTEM

System Description

The purpose of the NMP2 Low Pressure Core Spray (LPCS) System is to provide RPV coolant inventory makeup and spray cooling during large breaks in which the core is calculated to uncover. Also, following a small break and Automatic Depressurization System (Section 2.3.2.B.1) initiation, the LPCS System provides coolant inventory makeup.

The LPCS System consists of a suction line from the suppression pool, a single pump, discharge piping, isolation valves, and two spargers, with nozzles, inside the RPV. A low flow bypass line to the suppression pool is also included in the LPCS system. LPCS System instrumentation and controls are also included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49).

The components subject to an AMR extend from the suppression pool suction to the low pressure core spray nozzle on the RPV. The components subject to an AMR for this system also include the NSR piping, fittings, andvalves within the system boundaries.

USAR Reference(s)

More information about the LPCS System can be found in USAR Sections 6.3.1.2.2 and 6.3.2.2.3.

License Renewal Drawings

Components requiring an AMR for the LPCS System are highlighted on the following drawing:

- LR-031, Sheet C, Revision 1, Residual Heat Removal

- LR-031, Sheet F, Revision 1, Residual Heat Removal

- LR-032, Sheet A, Revision 1, Low Pressure Core Spray

Components Subject to an AMR

The component types requiring an AMR for the LPCS System and their intended functions are shown in Table 2.3.2.B.4-1. The AMR results for these component types are provided in Table 3.2.2.B-3.

Table 2.3.2.B.4-1
NMP2 Low Pressure Core Spray System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary

Component Type	Intended Functions
Flow Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Restriction Orifices	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.2.B.5 NMP2 PRIMARY CONTAINMENT ISOLATION SYSTEM

System Description

The purpose of the NMP2 Primary Containment Isolation System is to provide protection against a release of radioactive materials to the environment from accidents occurring to the Reactor Coolant Pressure Boundary (RCPB), lines connected to the RCPB, or lines that penetrate the primary containment. This is accomplished by automatic isolation valve closure of appropriate lines that penetrate the primary containment system.

The Primary Containment Isolation System consists of automatic isolation valves and associated piping for lines that penetrate the primary containment.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Primary Containment Isolation System can be found in USAR Section 6.2.4.

License Renewal Drawings

None (See Components Subject to an AMR below)

Components Subject to an AMR

The component types requiring an AMR for the Primary Containment Isolation System are evaluated in their respective systems.

2.3.2.B.6 NMP2 REACTOR CORE ISOLATION COOLING SYSTEM

System Description

The purpose of the NMP2 Reactor Core Isolation Cooling (RCIC) System is to assure that sufficient reactor water inventory is maintained in the reactor vessel to permit adequate core cooling following those events, in which, the normal feedwater supply is unavailable. This system can be used for accident and non-accident conditions.

The RCIC System consists of two redundant suction lines, a turbine-driven pump, discharge piping, isolation valves, and injection piping connected to the RPV head. The primary suction line is from one of the condensate storage tanks while the other line is from the suppression pool. The RCIC turbine is supplied steam from one of the main steam lines and discharges its exhaust water to the suppression pool. The RCIC System also is equipped with a discharge line fill pump that operates to maintain the pump discharge line in a filled condition. RCIC instrumentation and controls are also included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR extend from the suppression pool and CST to the RPV. The components subject to an AMR for this system also include the NSR blower housing, expansion joint, filter/strainers, piping and fittings, restriction orifices and valves within the system boundaries.

USAR Reference(s)

More information about the RCIC System can be found in USAR Sections 5.4.6 and 7.4.1.1.

License Renewal Drawings

Components requiring an AMR for the Unit 2 RCIC System are highlighted on the following drawings:

- LR-035, Sheet A, Revision 0, Reactor Core Isolation Cooling
- LR-035, Sheet B, Revision 1, Reactor Core Isolation Cooling
- LR-035, Sheet C, Revision 1, Reactor Core Isolation Cooling
- LR-035, Sheet D, Revision 1, Reactor Core Isolation Cooling

Components Subject to an AMR

The component types requiring an AMR for the RCIC System and their intended functions are shown in Table 2.3.2.B.6-1. The AMR results for these component types are provided in Table 3.2.2.B-4.

Table 2.3.2.B.6-1
NMP2 Reactor Core Isolation Cooling System

Component Type	Intended Functions
Blower	Structural Integrity (Attached) Pressure Boundary
Bolting	Pressure Boundary Leakage Boundary (Spatial)
Condensing Chambers	Pressure Boundary
Drain Pots	Pressure Boundary
Filters/Strainers	Leakage Boundary (Spatial)
	Pressure Boundary
Flow Elements	Pressure Boundary
Heat Exchangers	Heat Transfer, Pressure Boundary
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached)
	Pressure Boundary

Component Type	Intended Functions
Pumps	Pressure Boundary
Restriction Orifices	Leakage Boundary (Spatial) Structural Integrity (Attached)
	Pressure Boundary
Rupture Discs	Pressure Boundary Leakage Boundary (Spatial)
Terry Turbine	Pressure Boundary
Valves	Leakage Boundary (Spatial)
	Pressure Boundary

2.3.2.B.7 NMP2 RESIDUAL HEAT REMOVAL SYSTEM

System Description

The NMP2 Residual Heat Removal (RHR) System is composed of three independent loops, each containing a motor-driven pump, piping, valves, instrumentation and controls. Each loop has a suction source from the suppression pool and is capable of discharging water to either the reactor vessel via a separate nozzle, or back to the suppression pool via a full-flow test line. The A and B loops have heat exchangers that are cooled by service water. Loops A and B can also take suction from the reactor recirculation system suction and can discharge into the reactor recirculation discharge or to the suppression pool and drywell spray spargers. The A and B loops also have connections to reactor steam via the RCIC steam line (Section 2.3.2.B.6) and can discharge the resultant condensate to the RCIC pump suction or to the suppression pool. In addition, Loops A and B take suction from the fuel pool and discharge to the fuel pool cooling discharge.

The three loops of the RHR System combine to fulfill five modes of operation. Each mode has its own functional requirements and is presented separately as follows:

Low Pressure Coolant Injection Mode

All three loops provide water from the suppression pool to the bypass region inside the reactor vessel shroud, through three separate reactor vessel penetrations, to provide inventory makeup following large pipe breaks. Following a small break and Automatic Depressurization System (Section 2.3.2.B.1) initiation, this mode provides coolant inventory makeup.

Suppression Pool Cooling Mode

The Suppression Pool Cooling mode ensures that the suppression pool temperature does not exceed design limits following a reactor vessel blowdown or isolation event.

Containment Spray Cooling Mode

The Containment Spray Cooling mode provides two redundant means to spray the drywell and suppression pool to reduce internal pressure to below design limits.

Reactor Steam-Condensing Mode

The Reactor Steam-Condensing mode provides, in conjunction with the Reactor Core Isolation Cooling turbine, the capability to condense all of the steam generated 1 ½ hours after a reactor scram.

Shutdown Cooling Mode

The Shutdown Cooling mode provides the capability to remove decay and sensible heat from the reactor primary system so that the cold shutdown condition can be achieved and maintained.

The RHR system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR extend from the suction source, through the applicable train, to the discharge point. The components subject to an AMR for this system also include the NSR piping, fittings, filters, restriction orifices, and valves in the system vent and drain lines (except the line and vent valve in the Radwaste Building). The NSR piping, fittings and valves in the Radwaste Building are not in the vicinity of any SR component nor are they within the boundary of an equivalent anchor.

USAR Reference(s)

More information about the Unit 2 RHR System can be found in USAR Section 5.4.7.

License Renewal Drawings

Components requiring an AMR for the RHR System are highlighted on the following drawings:

- LR-004, Sheet B, Revision 1, Condensate Storage & Transfer
- LR-031, Sheet A, Revision 1, Residual Heat Removal System
- LR-031, Sheet B, Revision 1, Residual Heat Removal System
- LR-031, Sheet C, Revision 1, Residual Heat Removal System
- LR-031, Sheet D, Revision 1, Residual Heat Removal System
- LR-031, Sheet E, Revision 1, Residual Heat Removal System
- LR-031, Sheet F, Revision 1, Residual Heat Removal System
- LR-031, Sheet G, Revision 1, Residual Heat Removal System

Components Subject to an AMR

The component types requiring an AMR for the RHR System and their intended functions are shown in Table 2.3.2.B.7-1. The AMR results for these component types are provided in Table 3.2.2.B-5.

Table 2.3.2.B.7-1
NMP2 Residual Heat Removal System

Component Type	Intended Functions
"T" Quenchers	Pressure Boundary
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Condensing Chambers	Pressure Boundary
Filters/Strainers	Pressure Boundary Leakage Boundary (Spatial)
Flow Elements	Pressure Boundary

Component Type	Intended Functions
Heat Exchangers	Heat Transfer, Pressure Boundary
Level Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural integrity (Attached)
Pumps	Pressure Boundary
Restriction Orifices	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Temperature Elements	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.2.B.8 NMP2 STANDBY GAS TREATMENT SYSTEM

System Description

The purpose of the NMP2 Standby Gas Treatment System (SGTS) is to limit the release of radioactive gases from the reactor building to the environment within the guidelines of 10CFR100 in the event of a LOCA and to maintain a negative pressure in the reactor building under accident conditions. It is also used to provide charcoal filtration of the primary containment atmosphere when inerting, deinerting or controlling primary containment pressure.

The SGTS consists of two separate and redundant trains that draws air from the reactor building and exhausts air to the main stack via a common exhaust line. Each train consists of an inlet damper, demister, electric heating coil, bank of prefilters, bank of HEPA filters, bank of charcoal adsorber filters, a second bank of HEPA filters, fan, exhaust damper, and associated piping. Each charcoal filter train has an integrally mounted water (deluge) fire extinguishing facility consisting of discharge nozzles and distribution pipe. The air supply for the inlet and outlet dampers is normally from the Instrument Air System. Backup supply is provided by compressed air bottles or an externally connected tank. SGTS instrumentation and controls are also included within this system.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include the post-accident truck/bottle fills, which supply air for air-operated valves and include components that extend from the intake dampers inside the Reactor Building through the filtration system to the main stack. Components subject to AMR also include the NSR piping, fittings and valves downstream of the air pump skid discharge filters and two interfaces with the Primary Containment Purge System (Section 2.3.3.B.20).

USAR Reference(s)

More information about the Unit 2 SGTS can be found in USAR Section 6.5.1.

License Renewal Drawings

Components requiring an AMR for the SGTS are highlighted on the following drawings:

- LR-061, Sheet B, Revision 1, Primary Containment Purge & Standby Gas Treatment
- LR-061, Sheet C, Revision 1, Stand-By Gas

Components Subject to an AMR

The component types requiring an AMR for the SGTS and their intended functions are shown in Table 2.3.2.B.8-1. The AMR results for these component types are provided in Table 3.2.2.B-6.

Table 2.3.2.B.8-1
NMP2 Standby Gas Treatment System

Component Type	Intended Functions
Actuator	Pressure Boundary
Blowers	Pressure Boundary
Bolting	Pressure Boundary

Component Type	Intended Functions
Filters/Strainers	Filter, Pressure Boundary
Flow Elements	Pressure Boundary
Heaters	Pressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Restriction Orifices	Pressure Boundary
Tanks	Pressure Boundary
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3 AUXILIARY SYSTEMS

The NMP1 and NMP2 Auxiliary Systems are described in Sections 2.3.3.A and 2.3.3.B, respectively.

2.3.3.A NMP1 AUXILIARY SYSTEMS

NMP1 Auxiliary Systems are those systems used to support normal and emergency plant operations. The systems provide cooling, ventilation, sampling, and other required functions. The following systems are included in this subsection:

- NMP1 Administration Building Heating, Ventilation, and Air Conditioning (HVAC) System (Section 2.3.3.A.1)
- NMP1 Circulating Water System (Section 2.3.3.A.2)
- NMP1 City Water System (Section 2.3.3.A.3)
- NMP1 Compressed Air Systems (Section 2.3.3.A.4)
- NMP1 Containment Systems (Section 2.3.3.A.5)
- NMP1 Control Room HVAC System (Section 2.3.3.A.6)
- NMP1 Diesel Generator Building Ventilation System (Section 2.3.3.A.7)
- NMP1 Emergency Diesel Generator System (Section 2.3.3.A.8)
- NMP1 Fire Detection and Protection System (Section 2.3.3.A.9)
- NMP1 Hydrogen Water Chemistry System (Section 2.3.3.A.10)
- NMP1 Liquid Poison System (Section 2.3.3.A.11)
- NMP1 Miscellaneous Non-Contaminated Vents and Drains System (Section 2.3.3.A.12)NMP1 Neutron Monitoring System (Section 2.3.3.A.13)
- NMP1 Process Radiation Monitoring System (Section 2.3.3.A.14)
- NMP1 Radioactive Waste Disposal Building HVAC System (Section 2.3.3.A.15)

- NMP1 Radioactive Waste System (Section 2.3.3.A.16)

- NMP1 Reactor Building Closed Loop Cooling Water System (Section 2.3.3.A.17)NMP1 Reactor Building HVAC System (Section 2.3.3.A.18)

- NMP1 Reactor Water Cleanup System (Section 2.3.3.A.19)

- NMP1 Sampling System (Section 2.3.3.A.20)

- NMP1 Service Water System (Section 2.3.3.A.21)

- NMP1 Shutdown Cooling System (Section 2.3.3.A.22)NMP1 Spent Fuel Pool Filtering and Cooling System (Section 2.3.3.A.23)NMP1 Technical Support Center HVAC System (Section 2.3.3.A.24)

- NMP1 Turbine Building Closed Loop Cooling Water System (Section 2.3.3.A.25)

- NMP1 Turbine Building HVAC System (Section 2.3.3.A.26)

- NMP1 Electric Steam Boiler System (Section 2.3.3.A.27)

- NMP1 Makeup Demineralizer System (Section 2.3.3.A.28)

Note: The NMP1 Liquid Poison System, the Combustible Gas Control System (a subsystem of the NMP1 Containment Systems), and the Emergency Ventilation System (a subsystem of the NMP1 Reactor Building HVAC System) are classified as Engineered Safety Feature (ESF) Systems in the NMP1 (USAR). However, these systems are evaluated in this section because of similarities with other systems that are characterized as Auxiliary Systems in NUREG-1801.

2.3.3.A.1 NMP1 ADMINISTRATION BUILDING HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM

System Description

The NMP1 Administration Building HVAC is designed to provide equipment ventilation and personnel comfort. The Administration Building HVAC System supplies air to the Administration Building and its extension. This system consists of a rooftop air conditioning unit, supply fans, exhaust fans, and associated ductwork. Individual heating and air conditioning units are provided throughout the original Administration Building and the

Administration Building extension for personnel comfort. The Administration Building HVAC System louvered penthouse damper assembly also provides outside air to the Control Room HVAC System (Section 2.3.3.A.6).

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the Administration Building HVAC System can be found in USAR Section III.E.1.2.2.

License Renewal Drawing(s)

None (see Components Subject to an AMR below)

Components Subject to an AMR

The only components requiring an Aging Management Review (AMR) for the Administration Building HVAC System are the louvered penthouse damper assembly and cooling coil tubes that are shared with the Control Room HVAC System (Section 2.3.3.A.6) and are evaluated in that system. The remaining in-scope components for the Administration Building HVAC System are active components. Therefore, there are no components requiring an AMR for the Administration Building HVAC System.

2.3.3.A.2 NMP1 CIRCULATING WATER SYSTEM

System Description

The NMP1 Circulating Water System provides cooling water from Lake Ontario to the main condenser. Lake water is drawn from the intake tunnel through two parallel gates, three trains of mechanical rakes and traveling screens, to the suction of two redundant circulating water pumps. Each pump discharges in a separate line to one side of the condenser divided water box. Fish screens and sluice valves are installed in each line to prevent debris backwashing into the inlet tunnel. After leaving the condenser, the circulating water is discharged back into the lake.

The Circulating Water System consists of the following subsystems: Main Condenser Circulating Water, Screen Washing, Hydraulic Fluid to Tempering Gate, and Main Condenser Circulating Water Box Vents. The Main Condenser Circulating Water subsystem is as described above. The Screen Washing subsystem cleans debris from the traveling screens and consists of three trains, one supporting each traveling screen. Each train consists of a pump, piping, fittings and valves which takes a suction from service water and discharges to the respective traveling screen. The Hydraulic Fluid to Tempering Gate Actuator subsystem provides the motive force to position the circulating water tempering gate (i.e. E Gate). The subsystem consists of a reservoir, two pumps, filter and associated piping, fittings and valves to provide hydraulic fluid to the gate actuator. The Main Condenser Circulating Water Box Vents subsystem provides venting of the condenser water box. This subsystem is not WSLR.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR for this system include the mechanical rakes, traveling screens, and circulating water gates. The safety-related hoists for this system are evaluated as part of the Material Handling System (Section 2.4.A.5). The components subject to AMR also include the NSR circulating water pumps and discharge expansion joints, the screen wash pumps, piping, fittings and valves, and the hydraulic fluid reservior, filter, pumps, piping, fittings and valves for the tempering gate actuator.

USAR Reference(s)

More information about the Circulating Water System can be found in USAR Section XI.B.4.

License Renewal Drawing(s)

Components requiring an AMR for the Circulating Water System are highlighted on the following drawings:

- LR-18022-C, Sheet 1, Revision 1, Service Water Reactor & Turbine Bldgs. (P&ID)
- LR-18029-C, Revision 1, Condenser Connections, Condenser Spray and Water Box Flush

- LR-26941-C, Revision 1, Circulating Water System NPDES Permit (P&ID)
- LR-35715-C, Revision 0, Screen & Pumphouse Circ. Water Tempering Gate Hyd. Piping

Components Subject to an AMR

The component types requiring an AMR for the Circulating Water System and their intended functions are shown in Table 2.3.3.A.2-1. The AMR results for these component types are provided in Table 3.3.2.A-1.

Table 2.3.3.A.2-1
NMP1 Circulating Water System

Component Type	Intended Functions
Actuator	Leakage Boundary (Spatial)
Bolting	Leakage Boundary (Spatial)
Circulating Water Gates	Pressure Boundary
Expansion Joints	Leakage Boundary (Spatial)
Filter	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Tank	Leakage Boundary (Spatial)
Traveling Screens and Rakes	Filter
Valves	Leakage Boundary (Spatial)

2.3.3.A.3 NMP1 CITY WATER SYSTEM

System Description

The NMP1 City Water System provides hot and cold domestic water to various areas within the station. Cold water is distributed to the Lab, Decontamination Room, Laundry, Administration Building, emergency showers and two electric hotwater heaters. Hot water is supplied to the Lab and Administration Building.

The City Water System consists of a storage tank, hot water heater, hot water circulating pumps, pressure control valve and associated piping, valves, instrumentation and controls. The system is supplied by the offsite water system. The City Water System contains one safety-related breaker since a hot water circulating pump is powered from a safety-related powerboard.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the NSR piping, fittings, valves, tanks, pumps, and flow orifice, starting in the Turbine Building EL 250 and running to an eyewash station. It continues to EL 261 supplying eyewash stations, Control Room bath and kitchen, Administration Building, Makeup Demineralizer, emergency showers (Turbine Building and Radwaste Building), and Screen House. On Turbine Building EL 277, it supplies emergency showers and continues to the hot water heaters on EL 300 and the storage tank on EL 369. In the Screen House, City Water supplies the Fire Water Maintenance Head Tank. USAR Reference(s)

None

License Renewal Drawing(s)

Components requiring an AMR for the City Water System are highlighted on the following drawings:

- LR-18022-C, Sheet 5, Revision 0, Waste Buildings Closed Loop Cooling System

- LR-18042-C, Sheet 1, Revision 0, City Water Piping

- LR-18042-C, Sheet 2, Revision 0, City Water Piping

Components Subject to an AMR

The component types requiring an AMR for the City Water System and their intended functions are shown in Table 2.3.3.A.3-1. The AMR results for these component types are provided in Table 3.3.2.A-2.

Table 2.3.3.A.3-1
NMP1 City Water System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)

Component Type	Intended Functions
Flow Orifice	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.A.4 NMP1 COMPRESSED AIR SYSTEM

System Description

The NMP1 Compressed Air Systems are designed to provide clean, filtered air to various areas of NMP1. The Compressed Air Systems consist of the House Service Air System, the Instrument Air System, and the Breathing Air System. Further information on these systems is provided below.

The House Service Air System is a NSR system designed to provide a reliable source of clean air for use in maintenance and as a backup to the Instrument Air System. House Service Air is supplied by an air compressor. Outside air is drawn through an intake filter from the turbine roof, compressed, cooled, and discharged into a receiver. The House Service Air System contains two SR valves that provide isolation to the mobile air compressor connection taps.

The Instrument Air System is designed to provide a source of clean, dry air for use in instruments, controls, and as a backup to the Breathing Air System. Outside air is drawn through separate intake filters for each Instrument Air compressor, compressed, cooled, and discharged into a receiver. Air then passes through drying and filtering equipment to the instrument and controls and certain processes requiring high-pressure air. The Instrument Air System is comprised of safety-related and non-safety related portions. The NSR portion includes a compressor, receiver, dryer, filters and associated piping, valves, instruments and controls, and services the waste disposal building and other Radwaste systems. The SR portion includes two redundant compressors, receiver, dryer, filters, the containment spray air test receiver and associated piping, valves, instruments and controls. There is also a SR intertie valve separating the SR and NSR portions. The SR portion of the Instrument Air System services various loads throughout NMP1 for the operation of pneumatic devices.

The Breathing Air System is a NSR system designed to provide a reliable supply of clean, filtered air fit for human breathing. In the event of failure of the breathing air compressor, Breathing Air can be supplied from the Instrument Air System. Breathing Air is supplied by an air compressor. Outside air is drawn through an intake filter from the Turbine Building roof, compressed, cooled, filtered of dust, and discharged into a receiver. The Breathing Air System contains SR valves that are intertie valves to the Instrument Air System and Primary Containment Isolation Valves.

The Compressed Air Systems are in scope for license renewal for the following reasons:

- They perform safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- They contain SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49) and station blackout (10 CFR 50.63).

The components subject to an AMR include:

- The safety related portion of the Instrument Air System from the air intakes through the compressor, air receiver, dryers, and filters to the plant's instrument air loads, ending at various SR/NSR Transitions points;
- The non-safety related piping and valves that provide the intertie from the House Service Air to Instrument Air starting at the service air receiver and continuing to the safety related piping at the inlet to the IA dryers and filters.
- The safety related portion of the House Service Air System that connects through a removable spool piece to the mobile compressor
- The instrument air lines, manifolds, and valves that supply air operators for safety-related remote isolation/control valves, that supply other safety-related components/functions (e.g., the inflatable seal for the Reactor Building track bay door inflatable seal, containment spray system air test), or that serve as a pressure boundary in the instrument air flow paths to those safety-related operators/components/functions.

USAR Reference(s)

More information about the Compressed Air Systems can be found in USAR Section X.I.

License Renewal Drawing(s)

Components requiring an AMR for the Compressed Air Systems are highlighted on the following drawings:

- LR-18005-C, Sheet 1, Revision 0, Feedwater Flow, High Pressure
- LR-18005-C, Sheet 3, Revision 0, Feedwater Flow High Pressure (Flow Control Valve 29-134) P&ID
- LR-18006-C, Sheet 3, Revision 1, Drywell and Torus, Isolation Valves
- LR-18007-C, Sheet 1, Revision 1, Reactor Core Spray
- LR-18008-C, Revision 1, Spent Fuel Storage Pool, Filtering and Cooling System
- LR-18011-C, Sheet 1, Revision 1, Breathing and Service Air Systems
- LR-18011-C, Sheet 2, Revision 1, Instrument Air System
- LR-18011-C, Sheet 3, Revision 1, Reactor Building, Instrument Air System
- LR-18011-C, Sheet 4, Revision 1, Instrument Air System, Inst. Air Dryers 94-168, 94-169
- LR-18011-C, Sheet 5, Revision 1, Turbine Building, Instrument Air System
- LR-18011-C, Sheet 6, Revision 1, Turbine Auxiliary Extension Building and Screen and Pump House, Instrument Air System
- LR-18012-C, Sheet 2, Revision 1, Reactor Containment, Spray System
- LR-18013-C, Revision1, Reactor Building Heating, Cooling and Ventilating System
- LR-18014-C, Sheet 1, Revision1, Reactor Containment (Drywell & Torus) Inert Gas (N2) Purge and Fill, Drywell Cooling System

- LR-18014-C, Sheet 2, Revision 1, Drywell & Torus Leak Rate & Anal., T.I.P. Sys. Electrical Pen & N2 Supply
- LR-18016-C, Sheet 1, Revision1, Control Rod Drive
- LR-18016-C, Sheet 2, Revision 1, Control Rod Drive, Scram Dump Volume
- LR-18017-C, Sheet 1, Revision 1, Emergency Cooling System
- LR-18047-C, Revision 0, Control Room, Heating Ventilating & Air Cond. Sys.
- LR-22108-C, Sheet 9, Revision 0, Instrument Air Supply, Turbine Building, El. 261'-0" @ Column "H-9"
- LR-22108-C, Sheet 28, Revision 0, Instrument Air Supply, Turbine Building, El. 291'-0" @ Column "H-10"
- LR-22108-C, Sheet 34, Revision 0, Instrument Air Supply, Turbine Building, El. 369'-0" @ Column "G-8"
- LR-22108-C, Sheet 42, Revision 0, Instrument Air Supply, Turbine Building, El. 261'-0" @ Column "D-2"
- LR-22108-C, Sheet 43, Revision 0, Instrument Air Supply, Turbine Building, El. 261'-0" @ Column "D-3"
- LR-22109-C, Sheet 3, Revision 0, Instrument Air Supply, Turbine Building, El. 261'-0" @ Column "H-9"
- LR-22109-C, Sheet 9, Revision 0, Instrument Air Piping
- LR-22109-C, Sheet 10, Revision 0, Instrument Air Supply, Turbine Building, El. 277'-0" @ Column "BE-5"
- LR-22110-C, Sheet 1, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" @ Column "L-6"
- LR-22110-C, Sheet 2, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" @ Column "N-11"
- LR-22110-C, Sheet 6, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" @ Column "P-8"

- LR-22110-C, Sheet 14, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "N-8"
- LR-22110-C, Sheet 15, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "P-12"
- LR-22110-C, Sheet 16, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "N-8"
- LR-22110-C, Sheet 19, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "M-11"
- LR-22110-C, Sheet 20, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "L-7"
- LR-22110-C, Sheet 21, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "N-7"
- LR-22110-C, Sheet 22, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "N-9"
- LR-22110-C, Sheet 23, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "N-10"
- LR-22110-C, Sheet 26, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "M-6"
- LR-22110-C, Sheet 27, Revision 0, Instrument Air Supply, Reactor Building, El. 318'-0" @ Column "L-12"
- LR-22110-C, Sheet 28, Revision 0, Instrument Air Supply, Reactor Building, El. 340'-0" @ Column "Q-7"
- LR-22110-C, Sheet 29, Revision 0, Instrument Air Supply, Reactor Building, El. 340'-0" @ Column "P-8"
- LR-22110-C, Sheet 30, Revision 0, Instrument Air Supply, Reactor Building, El. 340'-0" @ Column "Q-9"
- LR-22110-C, Sheet, 33, Revision 0, Instrument Air Supply, Reactor Building, EL. 281' - 0" @ Column "K-9"
- LR-22110-C, Sheet 35, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "N-10"

- LR-22110-C, Sheet 37, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" @ Column "K-10"
- LR-22110-C, Sheet 39, Revision 0, Instrument Air Supply, Reactor Building, El. 318'-0" @ Column "P-8"
- LR-22110-C, Sheet 40, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "N-7"
- LR-22110-C, Sheet 41, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "N-8"
- LR-22110-C, Sheet 42, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "L-9"
- LR-22110-C, Sheet 43, Revision 0, Instrument Air Supply, Reactor Building, El. 261'-0" @ Column "P-11"
- LR-22110-C, Sheet 46, Revision 0, Instrument Air Supply, Reactor Building, El. 298'-0" @ Column "L-7"
- LR-22110-C, Sheet 47, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "K-7"
- LR-22110-C, Sheet 48, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" Column "K-7"
- LR-22110-C, Sheet 49, Revision 0, Instrument Air Supply, Reactor Building, EL. 298' - 0"@ Column "M-7"
- LR-22111-C, Sheet 1, Revision 0, Instrument Air Supply, Reactor Building, El. 237'-0" @ Column "M-11"
- LR-22111-C, Sheet 5, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "P-9"
- LR-22111-C, Sheet 6, Revision 0, Instrument Air Supply, Reactor Building, El. 281'-0" @ Column "N-10"
- LR-22112-C, Sheet 4, Revision 0, Instrument Piping for Air Supply, Turb. Extension Bldg. El. 289'-9" at Column Mb-16
- LR-22112-C, Sheet 5, Revision 0, Instrument Air Supply, Turbine Extension Building, El. 261' @ Column "Q-14"

- LR-22113-C, Sheet 1, Revision 0, Instrument Piping From Air Supply at Post on Column Row "Nc" Between 13 & 14

- LR-22113-C, Sheet 2, Revision 0, Instrument Air Supply, Turbine Extension Building, El. 289'-9" @ Column "NC-12A"

Components Subject to an AMR

The component types requiring an AMR for the Compressed Air Systems and their intended functions are shown in Table 2.3.3.A.4-1. The AMR results for these component types are provided in Table 3.3.2.A-3.

Table 2.3.3.A.4-1
NMP1 Compressed Air Systems

Component Type	Intended Functions
Air Dryers • Couplings • Flanges • Heads • Nozzles • Piping	Pressure Boundary
Air Receivers	Pressure Boundary
Bolting	Pressure Boundary Structural Integrity (Attached)
Drain Traps	Pressure Boundary
Filters/Strainers	Filter Pressure Boundary Structural Integrity (Attached) NSR Structural Support
Flow Gauge	Structural Integrity (Attached)
Heat Exchangers	Heat Transfer Pressure Boundary Structural Integrity (Attached) NSR Structural Support
Orifices	Pressure Boundary Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Regulators	Pressure Boundary
Separators	Filter Pressure Boundary Structural Integrity (Attached) NSR Structural Support
Tanks	Structural Integrity (Attached) NSR Structural Support

Component Type	Intended Functions
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3.A.5 NMP1 CONTAINMENT SYSTEM

System Description

The NMP1 Containment Systems are designed to control and monitor the primary containment environment. The Containment Systems consist of the Combustible Gas Control System, Primary Containment Area Cooling System, Containment Atmospheric Monitoring System, Torus Temperature Monitoring System, Torus Drain System, and the Integrated Leak Rate Monitoring System. Further information on these systems is provided below.

The Combustible Gas Control System is designed to prevent a combustible hydrogen-oxygen concentration from accumulating in the primary containment atmosphere immediately following or during a Loss-of-Coolant Accident (LOCA). The Combustible Gas Control System consists of the Containment Inerting System and the Containment Atmosphere Dilution System.

The Containment Inerting System is used to inert and deinert primary containment and to makeup nitrogen as required to maintain low oxygen concentration and containment pressure. The system consists of nitrogen storage tanks, vaporing units, vent and purge fan and associated piping and valves. The discharge of the fan is normally aligned to the main stack but can be aligned to the Reactor Building Emergency Vent System.

The Containment Atmosphere Dilution System is designed to monitor and maintain the oxygen concentration of the primary containment atmosphere to less than four percent during a LOCA. The Containment Atmosphere Dilution System functions by adding nitrogen to the primary containment atmosphere from the same supply as the Containment Inerting System. The H_2O_2 Monitoring System continuously monitors hydrogen and oxygen levels during normal operations and emergency conditions.

The Primary Containment Area Cooling System is designed to remove and dissipate the primary containment area heat gain. During normal operation, heat is released to the drywell as heat losses from the reactor, recirculation pump motors, hot pipes, and other equipment. Drywell cooling is accomplished by fan type coolers, which are cooled by the Reactor Building Closed Loop Cooling Water System (Section 2.3.3.A.17).

The Containment Atmospheric Monitoring System continuously monitors and provides Control Room indication of the containment airborne radioactivity level. This provides for detection of leaks of the reactor primary systems.

The Torus Temperature Monitoring System provides information on torus temperature, water level and airspace pressure to ensure that the cooling capacity of water maintained in the suppression chamber is available within the Technical Specification limits and to ensure that the containment structural integrity is maintained.

The Torus Drain System is used when the reactor is in cold shutdown or refueling condition. It allows the torus to be dewatered to permit maintenance or other activities.

The Integrated Leak Rate Monitoring System is used to support periodic 10 CFR 50 Appendix J testing for overall leakage from primary containment, which demonstrates the ability of containment to control the spread of radioactivity in the event of an accident.

The Containment systems are in scope for license renewal for the following reasons:

- They perform safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10CFR 45.4(a)(1).
- They contain SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR in this system are as follows:

- Combustible Gas Control System - Nitrogen Storage Tanks 11 and 12 and associated equipment. The N_2 vent and purge system which includes the N_2 vaporizer, vent and purge fan, and the piping/valves to add or remove N_2 from the drywell or torus. The mechanical and electrical penetrations are also included. The piping/valves for the drywell/torus H_20_2 monitoring system is also included.
- Primary Containment Area Cooling System - housings for the drywell air coolers and the inlet ducting from the upper containment areas through the coolers to the cooler duct discharge.

- Containment Atmospheric Monitoring System suction line from IV 201.7-09 to the Drywell Cam and the return back to the Drywell up to check valve 201.7-19.

- Torus Temperature Monitoring System - only contains active components; therefore, there are no components subject to an AMR.

- Torus Drain System - three capped drain lines, with their inclusive valves, connected to the bottom of the torus, one of which contains a sample line.

- Torus Dewatering System - the piping, fittings, and four valves, two of which are check valves with the disks removed.

USAR Reference(s)

More information about the Containment Systems can be found in USAR Sections VI and VII.G.

License Renewal Drawing(s)

Components requiring an AMR for the Containment Systems are highlighted on the following drawings:

- LR-18006-C, Sheet 1, Revision 1, Drywell & Torus, Isolation Valves (P&ID)

- LR-18006-C, Sheet 2, Revision 0, Drywell & Torus, Isolation & Blocking Valves (P&ID)

- LR-18006-C, Sheet 3, Revision 1, Drywell and Torus Isolation Valves (P&ID)

- LR-18007-C, Sheet 1, Revision 1, Reactor Core Spray (P&ID)

- LR-18013-C, Revision 1, Reactor Building Heating, Cooling and Ventilating System (P&ID)

- LR-18014, Sheet 5, Revision 1, Reactor Containment Drywell and Torus Mechanical and Electrical Penetration Leakage Test Stations (P&ID)

- LR-18014-C, Sheet 1, Revision 1, Reactor Containment (Drywell & Torus) Inert Gas (N2) Purge and Fill, Drywell Cooling System (P&ID)

- LR-18014-C, Sheet 2, Revision 1, Drywell & Torus Leak Rate & Anal. T.I.P. Sys. Electrical Pen & N2 Supply (P&ID)
- LR-18014-C, Sheet 3, Revision 1, Reactor Containment Drywell & Torus Inert Gas (N2) Supply No. 11 (P&ID)
- LR-18014-C, Sheet 4, Revision 1, Reactor Containment Drywell & Torus Inert Gas (N2) Supply No. 12 (P&ID)
- LR-18014-C, Sheet 6, Revision 1, Reactor Containment Drywell and Torus Mechanical and Electrical Penetration Leakage Test Stations (P&ID)
- LR-18022-C, Sheet 2, Revision 1, Reactor Bldg., Closed Loop Cooling System (P&ID)
- LR-26939-C, Revision 0, Primary Containment Atmosphere H2-O2 Monitor Sys. No. 12 (P&ID)
- LR-26949-C, Revision 0, Primary Containment Atmosphere, H2-O2 Monitor System #11
- LR-45136-C, Sheet 8, Revision 0, Instrumentation, Valve Schedule (P&ID)
- LR-69007-C, Sheet 1, Revision 0, Torus Level SE Corner Instrument Diagram
- LR-69007-C, Sheet 2, Revision 0, Torus Level Northeast Corner Instrument Diagram
- LR-69014-C, Sheet 1, Revision 0, Drywell Press. & Lvl, West Instrument Room El. 284'-0" Instrument Diagram
- LR-69014-C, Sheet 2, Revision 0, Drywell Press. & Lvl, East Instrument Room El. 284'-0" Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Containment Systems and their intended functions are shown in Table 2.3.3.A.5-1. The AMR results for these component types are provided in Table 3.3.2.A-4.

Table 2.3.3.A.5-1
NMP1 Containment Systems

Component Type	Intended Functions
Airborne Activity Monitor	Structural Integrity (Attached) NSR Structural Support
Blower	Structural Integrity (Attached)
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Ducting	Pressure Boundary
Filters/Strainers	Filter
	Pressure Boundary
Flame Arresters	Pressure Boundary
Flow Elements	Pressure Boundary Structural Integrity (Attached)
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached) Plateout/Holdup
Pumps	Pressure Boundary Structural Integrity (Attached)
Rupture Discs	Pressure Boundary Structural Integrity (Attached)
Tanks	Pressure Boundary Structural Integrity (Attached)
Traps	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached) Plateout/Holdup
Vaporizers	Heat Transfer Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached) NSR Structural Support

2.3.3.A.6 NMP1 CONTROL ROOM HVAC SYSTEM

System Description

The NMP1 Control Room HVAC System provides filtration, pressurization, heating and cooling to the Control Complex during normal and emergency conditions. The system is also equipped with an independent smoke and heat removal system for the Main and Auxiliary Control Rooms and Cable

Spreading Room. The Control Room HVAC System is comprised of three functional systems which are the Normal Ventilation, Emergency Ventilation and Smoke Purge Systems. Further information on these systems is provided below.

The Normal Ventilation System provides fresh and recirculated air for heating and cooling the Control Complex during normal operation. Fresh air is drawn into the system through an intake structure shared with the Administration Building HVAC System, passes through a heater, isolation dampers, filters, coolers and to the circulating fan which discharges to various areas in the Control Complex. The coolers are supplied by the chilled water system which is comprised of two redundant chiller trains. Heating is provided by duct mounted electric heaters.

The Emergency Ventilation System provides clean, filtered fresh air combined with recirculated air for heating and cooling the Control Complex during emergency conditions. This system uses the same equipment and flowpath as the Normal Ventilation System except that instead of air passing through the isolation dampers, it is directed to the Emergency Ventilation System components. These components include two redundant fans, a high efficiency filter and a charcoal filter.

The Smoke Purge System is a fire protection ventilation system that removes smoke and heat from the Main and Auxiliary Control Rooms and Cable Spreading Room. This system is comprised of an air make-up fan, exhaust fan and associated dampers and controls to remove smoke and heat from the affected area.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include those from the outside air supply at the Administration Building HVAC louvered penthouse damper assembly to the exhaust to atmosphere from the exhaust fan, including the control room emergency vent fans, the control room circulation fan, as well as those components in the recirculation loop, the Control Room HVAC chilled water system, and the Control Room HVAC makeup inward from its inboard isolation valve.

USAR Reference(s)

More information about the Control Room HVAC System can be found in USAR Section III.B.2.2.

License Renewal Drawing(s)

Components requiring an AMR for the Control Room HVAC System are highlighted on the following drawings:

- LR-18021-C, Sheet 2, Revision 0, Turbine Building Heating Cooling and Ventilating Systems Air Conditioning Sys. for Lab. Areas
- LR-18046-C, Sheet 1, Revision 0, Air Conditioning Sys. for the Admin. Bldg. - Heating and Ventilation Sys. for Shop Stores and Locker Room
- LR-18047-C, Revision 0, Control Room, Heating Ventilating & Air Cond. Sys.
- LR-45136-C, Sheet 8, Revision 0, Instrumentation, Valve Schedule

Components Subject to an AMR

The component types requiring an AMR for the Control Room HVAC System and their intended functions are shown in Table 2.3.3.A.6-1. The AMR results for these component types are provided in Table 3.3.2.A-5.

Table 2.3.3.A.6-1
NMP1 Control Room HVAC System

Component Type	Intended Functions
Blowers	Pressure Boundary
Bolting	Pressure Boundary
Ducting	Pressure Boundary
Expansion Tank	Pressure Boundary
Filters/Strainers	Filter, Pressure Boundary
Flow Elements	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary
Pumps	Pressure Boundary

Component Type	Intended Functions
Seals and Gaskets	Pressure Boundary
Temperature Elements	Pressure Boundary
Valves and Dampers	Fire Barrier Pressure Boundary

2.3.3.A.7 NMP1 DIESEL GENERATOR BUILDING VENTILATION SYSTEM

System Description

The NMP1 Diesel Generator Building Ventilation System is designed to maintain the diesel room temperature below the allowed maximum for continuous operation of the emergency diesel generator. Both diesel generator rooms are equipped with their own ventilation system. The system consists of roof exhaust fans, a roll-up door, electric heaters, and associated controls. The doors operate in conjunction with the room exhaust fan pairs to ensure that the diesel generator room temperature remains below the allowed maximum. The heaters operate to maintain the diesel generator room ambient temperature at or above 50°F.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

The components subject to AMR are the roof-mounted exhaust fan housings.

USAR Reference(s)

None

License Renewal Drawing(s)

The components that are subject to an AMR are not shown on any license renewal drawings.

Components Subject to an AMR

The component types requiring an AMR for the Diesel Generator Building Ventilation System and their intended functions are shown in Table 2.3.3.A.7-1. The AMR results for these component types are provided in Table 3.3.2.A-6.

Table 2.3.3.A.7-1
NMP1 Diesel Generator Building Ventilation System

Component Type	Intended Functions
Blowers	Pressure Boundary

2.3.3.A.8 NMP1 EMERGENCY DIESEL GENERATOR SYSTEM

System Description

The NMP1 Emergency Diesel Generator System provides the standby source of electric power for equipment required for mitigation of the consequences of an accident, for safe shutdown and for maintenance of the station in a safe condition under postulated event and accident scenarios. This system consists of two identical, physically separate, and electrically independent standby diesel generators. Each diesel generator has associated subsystems which assist the unit in performing its safety function. Further information on these subsystems is provided below.

The Diesel Engine subsystem consists of a diesel engine which provides the mechanical power to run the electric generator.

The Fuel Oil subsystem supplies fuel oil for engine combustion and is comprised of the fuel oil storage and handling system and the engine fuel oil system. The fuel oil storage and handling system includes an underground storage tank, skid mounted day tank and fuel oil transfer pump. The engine fuel oil system draws fuel oil from the day tank and delivers it to the engine injector head by a DC pump (engine startup) and engine driven pump (engine operation).

The Air Start subsystem supplies high-pressure air to start the diesel engine. This subsystem includes two identical air compressors, five air tanks and two air start motors.

The Combustion Air Intake and Exhaust subsystem supports the engine combustion process by supplying filtered air to the diesel engine and then discharging the exhaust gases. This subsystem includes an intake filter, silencer, blower, turbocharger assembly and exhaust muffler.

The Lube Oil subsystem provides cooling and lubrication for major engine components. This subsystem includes DC pumps, engine driven pump, strainer, filter and cooler.

The Cooling Water subsystem removes heat from the diesel engine via the engine cooling system and diesel generator raw water cooling system. The engine cooling system is a closed system built into the engine, includes two engine driven pumps and a temperature control valve and transfers heat from the engine to the raw water heat exchangers. The raw water cooling system draws water from the lake and pumps it through a strainer to the raw water heat exchangers and discharges it back to the lake. This system can also be supplied by the fire water system (through a spool piece) in the event of a loss of the raw water cooling pumps.

The Electric Generator subsystem provides the electrical output of the diesel generator unit and includes the required controls. This subsystem includes the generator, voltage regulator and associated controls.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR for the emergency diesel generators are those in the diesel starting air, fuel oil supply, lubricating oil, and cooling water subsystems. The components subject to an AMR for this system also include the NSR piping and fittings, associated with the Fire water starting at the intertie blind flanges and stopping at valves 100-508 & the tee at 100-506. The Diesel Generator service water discharge cooling line starting at the tee into Service Water discharge line for area coolers 203-59 & 203-91 and continuing to the Service Water discharge to the tunnel are also included in scope. The Diesel Generator air start compressors up to the discharge check valve are also in scope for LR.USAR Reference(s)

More information about the Emergency Diesel Generator System can be found in USAR Section IX.B.4.1.

License Renewal Drawing(s)

Components requiring an AMR for the Emergency Diesel Generator System are highlighted on the following drawings:

- LR-18022-C, Sheet 1, Revision 1, Service Water, Reactor & Turbine Bldgs.

- LR-18026-C, Sheet 1, Revision 1, Emergency Diesel Generator #102, Starting Air, Cooling Water, Lube Oil & Fuel
- LR-18026-C, Sheet 2, Revision 1, Emergency Diesel Generator #103, Starting Air, Cooling Water, Lube Oil & Fuel
- LR-18027-C, Sheet 1, Revision 1, Service Water, Turbine & Administration Buildings
- LR-18030-C, Sheet 3, Revision 1, Fire Protection, Water System

Components Subject to an AMR

The component types requiring an AMR for the Emergency Diesel Generator System and their intended functions are shown in Table 2.3.3.A.8-1. The AMR results for these component types are provided in Table 3.3.2.A-7.

Table 2.3.3.A.8-1
NMP1 Emergency Diesel Generator System

Component Type	Intended Functions
Air Intakes	Pressure Boundary
Air Start Motors	Pressure Boundary
Bolting	Pressure Boundary Structural Integrity (Attached)
Compressors	Structural Integrity (Attached) NSR Structural Support
Exhausts for Emergency Diesel Generator	Pressure Boundary
Filters/Strainers	Filter Pressure Boundary
Flow Elements	Pressure Boundary Structural Integrity (Attached)
Flow Glasses	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary Structural Integrity (Attached)
Level Glasses	Pressure Boundary
Mufflers and Silencers	Pressure Boundary
Orifices	ThrottlePressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Pumps	Pressure Boundary

Component Type	Intended Functions
Tanks	Pressure Boundary
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3.A.9 NMP1 FIRE DETECTION AND PROTECTION SYSTEM

System Description

The NMP1 Fire Detection and Protection System is designed to achieve the following objectives:

- Provide automatic fire detection in those areas where the danger of fire exists.
- Provide fire extinguishment by fixed equipment activated automatically or manually for those areas where the danger of fire exists.
- Provide manually-operated fire extinguishing equipment for use by station personnel at points throughout the property and station.
- Provide a backup cooling water source for the reactor emergency cooling system in the event of a complete loss of all other sources of condensing water.
- Provide an emergency source of water for containment and reactor vessel flooding.
- Provide an emergency source of water to the spent fuel storage pool (hose).
- Provide a backup water source for the emergency service water system.
- Provide an emergency cooling water supply to either diesel generator.

These objectives are accomplished by the following systems.

The Fire Detection and Control System provides for the identification of a fire, annunciation locally and in the Control Room, and in certain zones, automatically initiates suppression. This system is comprised of 16 local fire alarm control panels, one main fire alarm control panel, detectors and associated circuitry.

The Fire Water System provides for the extinguishment of fires using water. Water is supplied throughout the station via the fire main loop which consists of the outside underground piping and an aboveground fire main transversing the Turbine Building. Two main fire pumps (one electric and one diesel-driven) and two jockey pumps maintain the system pressure. Water to suppress a fire is delivered by either an automatic sprinkler system or manual hose station.

The Halon Suppression System provides for the extinguishment of fires using Halon 1301. A total-flooding Halon system is used to protect the auxiliary control room, emergency cooling isolation valve room, administration building telephone equipment areas, Radwaste Solidification and Storage Building (RSSB) control room, RSSB electrical equipment room, and security equipment areas. The supply for these areas is provided by cylinder assemblies located near the protected area.

The Carbon Dioxide Suppression System provides for the extinguishment of fires using carbon dioxide. Total-flooding and local application carbon dioxide systems are installed to protect several different hazards in the station. The areas protected are the turbine oil tank room, reactor recirculation motor generator sets, powerboards 102 and 103, diesel generators 102 and 103, hydrogen seal oil enclosure, turbine oil reservoir room, cable spreading room, generator exciter housing, turbine generator bearings, turbine oil tanks and auxiliary control room (backup to Halon). The Carbon Dioxide System supports the main generator and is evaluated in the Main Generator and Auxiliary System (Section 2.3.4.A.4).

Portable fire extinguishers are also provided throughout the station to provide additional protection.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and station blackout (10 CFR 50.63).

The entire mechanical portion of the Fire Protection System is subject to an AMR This includes the pressure maintenance pumps, the motor driven fire pump and cooler; and the diesel driven fire pump and diesel cooler. In addition, the diesel air start system (to the interface with Instrument Air) and the diesel fuel oil supply to the interface with the Diesel Fuel Oil System are also subject to an AMR, as is the fire water cross-connect to NMP2 to the normally closed blocking valve MOV128..USAR Reference(s)

More information about the Fire Detection and Protection System can be found in USAR Sections X.10A and X.10B.

License Renewal Drawing(s)

Components requiring an AMR for the Fire Detection and Protection System are highlighted on the following drawings:

- LR-18022-C, Sheet 1, Revision 1, Service Water, Reactor & Turbine Bldgs.
- LR-18026-C, Sheet 2, Revision 1, Emergency Diesel Generator #103, Starting Air, Cooling Water, Lube Oil & Fuel
- LR-18030-C, Sheet 2, Revision 0, Fire Protection Foam & Spray Water
- LR-18030-C, Sheet 3, Revision 1, Fire Protection, Water System
- LR-18030-C, Sheet 4, Revision 1, Fire Protection, Water System
- LR-18030-C, Sheet 5, Revision 0, Fire Protection, Water System
- LR-18030-C, Sheet 6, Revision 0, Fire Protection, Water System
- LR-18030-C, Sheet 7, Revision 0, Fire Protection, Water System
- LR-18030-C, Sheet 8, Revision 0, Fire Protection, Water System
- LR-18030-C, Sheet 9, Revision 0, Fire Protection, Water System
- LR-18036-C, Revision1, Sealing Water for Turbine Building, Waste Building, Reactor Building, and Screen House
- LR-18040-C, Sheet 2, Revision 0, Fuel Oil Handling System, For Emergency Diesel Fire Pump
- LR-45094-C, Revision 0, Fire Protection, Halon

- LR-69030-C, Sheet 2, Revision 0, Fire Protection (Water) Hdr Pressure Screen House EL. 256'-0" Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Fire Detection and Protection System and their intended functions are shown in Table 2.3.3.A.9-1. The AMR results for these component types are provided in Table 3.3.2.A-8.

Table 2.3.3.A.9-1
NMP1 Fire Detection and Protection System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial)
Filters/Strainers	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Fire Hydrants	Pressure Boundary
Flow Elements	Pressure Boundary Leakage Boundary (Spatial)
Gearbox	Pressure Boundary
Heat-Actuated Devices	Pressure Boundary
Heat Exchangers	Pressure Boundary Leakage Boundary (Spatial)
Orifices	Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary Leakage Boundary (Spatial)
Silencers	Pressure Boundary
Sluice Gate for Motor Driven Fire Pump	Pressure Boundary
Spray Nozzles	Pressure Boundary Spray
Sprinklers	Pressure Boundary Leakage Boundary (Spatial) Spray
Tanks and Air Receivers	Pressure Boundary Leakage Boundary (Spatial)

Component Type	Intended Functions
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.10 NMP1 HYDROGEN WATER CHEMISTRY SYSTEM

System Description

The NMP1 Hydrogen Water Chemistry and Noble Metal Chemical Addition Systems are designed to mitigate intergranular stress corrosion cracking of the reactor recirculation piping and the RPV internals. The Hydrogen Water Chemistry System injects hydrogen into the Feedwater/HPCI System to suppress the radiolytic generated oxidant concentration in the reactor core regions. This significantly reduces the electrochemical potential of the reactor components and greatly reduces crack initiation and growth. Oxygen is then injected into the Off-Gas System to maintain the stoichiometric mixture of hydrogen and oxygen in the recombiner. The Noble Metal Chemical Addition System includes permanent monitoring equipment as well as connections for periodically injecting a noble metal solution.

The Hydrogen Water Chemistry System does not perform any intended functions for license renewal purposes and, therefore, is not described further. The monitoring portion of the Noble Metal Chemical Injection System does, however, perform an intended function. The monitoring portion draws a sample from the Reactor Water Cleanup System, analyzes the effectiveness of the noble metal treatment in the durability monitor, and returns the sample to the Reactor Water Cleanup System. This system consists of tubing, valves, durability monitor and associated instruments and controls.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR include the NSR piping, fittings, flow element and valves from the Reactor Water Cleanup System tap to the discharge of the Sampling System..

USAR Reference(s)

More information about the Hydrogen Water Chemistry System can be found in USAR Section X.M.

License Renewal Drawings

Components requiring an AMR for the Hydrogen Water Chemistry System are highlighted on the following drawings:

- LR-18009-C, Sheet 1, Revision 1, Reactor Clean-up System
- LR-18009-C, Sheet 3, Revision 0, Reactor Water Clean-up (RWCU) System, Durability Monitor and Crack Growth Monitor
- LR-18041-C, Sheet 2, Revision 1, Sampling Points, Liquids-Shutdown Cooling, Fuel Pool, Clean-up & Liquid Poison Systems

Components Subject to an AMR

The component types requiring an AMR for the Hydrogen Water Chemistry System and their intended functions are shown in Table 2.3.3.A.10-1. The AMR results for these component types are provided in Table 3.3.2.A-9.

Table 2.3.3.A.10-1
NMP1 Hydrogen Water Chemistry System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Flow Element	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary(Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.A.11 NMP1 LIQUID POISON SYSTEM

System Description

The NMP1 Liquid Poison System is a standby, redundant, independent control system that is designed to bring the reactor to a cold shutdown condition in the unlikely event that the control rod system fails to shut down and hold the reactor sub-critical as the reactor cools and xenon decays.

The Liquid Poison System consists of an ambient pressure tank with immersion heater for low-temperature sodium pentaborate solution storage, two high-pressure positive displacement pumps for injecting the solution into the reactor core, two explosive actuated shear plug valves for isolating the liquid poison from the RPV until required, an in-vessel sparger ring, a test tank, two reactor coolant isolation check valves, pressure relief valves and associated piping, valves, instrumentation and controls.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

The components subject to an AMR include the SR liquid poison tank, liquid poison accumulators, liquid poison pumps, and connecting piping and valves. It also includes the NSR portions starting at the test tank suction lines to the pumps and return lines to the test tank. The Demin Water makeup to the test tank and flush for the pumps is also subject to an AMR, as are the drains lines from the test tank, pumps, poison tank, and discharge line to the RX.

USAR Reference(s)

More information about the Liquid Poison System can be found in USAR Section VII.C.

License Renewal Drawing(s)

Components requiring an AMR for the Liquid Poison System are highlighted on the following drawing:

- LR-18019-C, Revision 1, Reactor Liquid Poison System

Components Subject to an AMR

The component types requiring an AMR for the Liquid Poison System and their intended functions are shown in Table 2.3.3.A.11-1. The AMR results for these component types are provided in Table 3.3.2.A-10.

Table 2.3.3.A.11-1
NMP1 Liquid Poison System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Tanks	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.12 NMP1 MISCELLANEOUS NON-CONTAMINATED VENTS AND DRAINS SYSTEM

System Description

The NMP1 Miscellaneous Non-Contaminated Vents and Drains System is designed to route the non-contaminated effluents to floor drains, building sumps, the discharge tunnel, and the turbine building equipment drain tank. This system consists of vents, drains, and leak-off equipment from various non-contaminated sources including the Feedwater/High Pressure Coolant Injection (FW/HPCI) System (Section 2.3.4.A.3), Compressed Air Systems (Section 2.3.3.A.4), and the Makeup and Demineralizer System.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the NSR piping and fittings containing liquid in the Turbine Building and the Screen and Pump House Building that are directly over Safety Related equipment.

USAR Reference(s)

More information about the Miscellaneous Non-Contaminated Vents and Drains System can be found in USAR Section XII.A.2.2.

License Renewal Drawing(s)

None (the only components that are subject to an AMR are NSR piping, fittings, and equipment containing liquid, which are not shown on any license renewal drawings).

Components Subject to an AMR

The component types requiring an AMR for the Miscellaneous Non-Contaminated Vents and Drains System and their intended functions are shown in Table 2.3.3.A.12-1. The AMR results for these component types are provided in Table 3.3.2.A-11.

Table 2.3.3.A.12-1
NMP1 Miscellaneous Non-Contaminated Vents and Drains System

Component Type	Intended Functions
Piping and Fittings	Leakage Boundary (spatial)

2.3.3.A.13 NMP1 NEUTRON MONITORING SYSTEM

System Description

The NMP1 Neutron Monitoring System is designed to provide neutron flux level monitoring of the reactor in three separate ranges. These include Source Range Monitoring, Intermediate Range Monitoring, and Power Range Monitoring. This system also includes the capability to calibrate the local power range monitors during normal operation. The Neutron Monitoring System is used to monitor and aid the operator in controlling the reactor from startup through full power.

The Source Range Monitoring and Intermediate Range Monitoring Systems are equipped with mechanically retractable detector assemblies which allow the operator to insert the detectors into the reactor core, and then retract the detectors to a low neutron flux region below the core when the proper point in reactor operation is reached. The Local Power Range Monitoring detectors are installed at fixed locations in the reactor core. The Average Power Range Monitoring system utilizes the signals from the Local Power Range Monitoring detectors to provide average power range signals for monitoring. These systems contain all electrical components.

The Neutron Monitoring System also includes the Traversing In-core Probe System which provides the capability to calibrate the local power range monitors during normal operation. The Traversing In-core Probe system consists of four identical trains, each containing ionization chamber detectors, indexing mechanism, ball valve, shear valve, chamber shield, drive mechanism and drive control unit. The drive mechanism drives the Traversing In-core Probe detector through the ball and shear valves and indexing mechanism into calibration tubes and then guide tubes located in the reactor core. The ball and shear valves function as reactor coolant isolation valves if a leak were to occur in a calibration or guide tube. The drive mechanisms, indexer mechanisms and calibration and guide tubes are continuously purged with nitrogen gas.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

The components subject to an AMR include the four Traversing In-core Probe system ball valves and their associated guide tubes from the shear valves to the containment penetration. The dry tubes for Source Range Monitoring and Intermediate Range Monitoring detectors are not included in the system boundary. The dry tubes are included in the RPV Internals (Section 2.3.1.A.2).

USAR Reference(s)

More information about the Neutron Monitoring System can be found in USAR Section VIII.C.

License Renewal Drawing(s)

Components requiring an AMR for the Neutron Monitoring System are highlighted on the following drawing:

- LR-18014-C, Sheet 2, Revision1, Drywell & Torus Leak Rate & Anal, T.I.P. Sys. Electrical Pen & N2 Supply

Components Subject to an AMR

The component types requiring an AMR for the Neutron Monitoring System and their intended functions are shown in Table 2.3.3.A.13-1. The AMR results for these component types are provided in Table 3.3.2.A-12.

Table 2.3.3.A.13-1
NMP1 Neutron Monitoring System

Component Type	Intended Functions
Bolting	Pressure Boundary

Component Type	Intended Functions
Piping	Pressure Boundary
Valves	Pressure Boundary

2.3.3.A.14 NMP1 PROCESS RADIATION MONITORING SYSTEM

System Description

The NMP1 Process Radiation Monitoring System is designed to monitor radiation levels of liquid and gaseous processes throughout the plant, assist in controlling the release of radioactive byproducts, and provide for personnel safety by warning of abnormal radiation levels.

The Process Radiation Monitoring System consists of the following independent subsystems: Main Steam Line Radiation Monitoring, Air-ejector Off-Gas Radiation Monitoring, Stack Effluent Radiation Monitoring, Process Liquid Radiation Monitoring, Reactor Building Ventilation Radiation Monitoring, Emergency Cooling Condenser Vent Monitor, and Refueling Bridge High Radiation Monitor. Each of these subsystems consists of an appropriate detector and monitor and provide readouts, alarms and computer points to aide the operator. Only the Air-Ejector Off-Gas, Stack Effluent and Process Liquid Radiation Monitors draw a sample from their respective process streams. These subsystems were evaluated and determined to be not WSLR. The remaining subsystems measure radiation levels directly on the process piping or local area.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Process Radiation Monitoring System can be found in USAR Section VIII.C.3.

License Renewal Drawing(s)

None (see Components Subject to an AMR below)

Components Subject to an AMR

The in-scope components for the Process Radiation Monitoring System are active components. Therefore, there are no components requiring an AMR for the Process Radiation Monitoring System.

2.3.3.A.15 NMP1 RADIOACTIVE WASTE DISPOSAL BUILDING HVAC SYSTEM

System Description

The NMP1 Radioactive Waste Disposal Building HVAC System provides heating and ventilation for personnel comfort, equipment protection and for controlling possible radioactivity release to the atmosphere.

The Radioactive Waste Disposal Building HVAC System consists of filters, fans, dampers and associated ductwork, instrumentation and controls. Air is drawn into the system through an inlet louver, filter and heater by two supply fans and distributed throughout the Waste Building and Waste Building Extension. An air outlet is located in each room and at each piece of equipment where radioactive contamination could be released. The exhaust ductwork leads to two trains of inlet and outlet dampers, roughing and high efficiency filters, and exhaust fans. Two smaller exhaust fans provide the discharge path for specific areas within the Waste Disposal Building. The Waste Disposal Building Extension also has two separate trains of dampers, filters and fans. The discharge from all of the exhaust fans travels through one of three backdraft dampers and exits the station through the vent stack.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

The components subject to an AMR are the system backdraft dampers to the Vent Stack.

USAR Reference(s)

More information about the Radioactive Waste Disposal Building HVAC System can be found in USAR Section III.C.1.4.

License Renewal Drawing(s)

Components requiring an AMR for the Radioactive Waste Disposal Building HVAC System are highlighted on the following drawings:

- LR-18028-C, Sheet 1, Revision 0, Waste Disposal Building, Heating & Ventilation System

Components Subject to an AMR

The component types requiring an AMR for the Radioactive Waste Disposal Building HVAC System and their intended functions are shown in Table 2.3.3.A.15-1. The AMR results for these component types are provided in Table 3.3.2.A-13.

Table 2.3.3.A.15-1
NMP1 Radioactive Waste Disposal Building HVAC System

Component Type	Intended Functions
Dampers	Pressure Boundary

2.3.3.A.16 NMP1 RADIOACTIVE WASTE SYSTEM

System Description

The NMP1 Radioactive Waste System is designed to meet the following objectives:

- Collect and process all radioactive waste generated without limiting normal Station operation;
- Collect and process radioactive wastes for disposal, or transfer to a vendor for processing and disposal;
- Release radioactive material to the environment in a controlled manner so that all releases are within the limits of 10 CFR 20 and the Technical Specifications; and
- Retain radioactive wastes, if they accidentally leak from the systems, so that they can be recovered and reprocessed.

The Radioactive Waste System consists of the Gaseous Waste System, Liquid Waste System, and Solid Waste System. Further information on these systems is provided below.

Gaseous radioactive wastes include airborne particulates as well as gases vented from process equipment. Sources of gaseous waste activity are the offgas system effluent, steam-packing exhauster system effluent, and building ventilation exhausts. The systems that comprise the Gaseous Waste are described in further detail in the referenced sections:

- Offgas System (Section 2.3.4.A.2)
- Steam-packing Exhauster System [see the Condenser Air Removal and Off-Gas System, (Section 2.3.4.A.2)]
- Turbine Building HVAC System (Section 2.3.3.A.26)
- Reactor Building HVAC System (Section 2.3.3.A.18)
- Vent Stack (Section 2.4.A.11)
- Radioactive Waste Disposal Building HVAC System (Section 2.3.3.A.15)

The Liquid Waste System processes the liquids collected in equipment drains and floor drains in areas that are potentially contaminated with radioactive materials. The wastes are collected in the floor drain sumps located within the drywell, the Reactor Building, the Turbine Building, the Radioactive Waste Solidification and Storage Building, the Offgas Building, and the Waste Disposal Building. The liquids in these floor drain sumps are pumped into the floor drain collector, waste neutralizer tank, or utility collector tank, which are located in the Waste Disposal Building.

The Solid Waste System processes spent resins, filter sludge, and concentrated waste. It also is designed for collection and shipment of low-level solids. Wastes may be processed or solidified onsite, or transferred to a vendor for processing.

The Radioactive Waste System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR are the drywell equipment drain tank, the drywell floor drain tank, and associated pumps, valves, and piping up the Drywell Isolation vavles. The Reactor Building equipment drain tank, the reactor building floor drain tank and associated pump, and the piping and valves upstream of the tanks to the waste collector tank is also subject to an AMR. The components subject to an AMR for this system also include the NSR piping, fittings, pumps, and valves associated with the Reactor Building, Turbine Building, and Waste Disposal Building sumps..

USAR Reference(s)

More information about the Radioactive Waste System can be found in USAR Section XII.A.

License Renewal Drawing(s)

Components requiring an AMR for the Radioactive Waste System are highlighted on the following drawings:

- LR-18002-C, Sheet 1, Revision 1, Steam Flow, Main Steam and High Pressure Turbine
- LR-18006-C, Sheet 3, Revision 1, Drywell and Torus Isolation Valves (P&ID)
- LR-18008-C, Revision 1, Spent Fuel Storage Pool, Filtering and Cooling System
- LR-18018-C, Sheet 1, Revision 1, Reactor Shutdown Cooling
- LR-18045-C, Sheet 5, Revision 0, Waste Disposal System, 20 GPM Waste Concentrator
- LR-18045-C, Sheet 7, Revision 1, Waste Disposal System
- LR-18045-C, Sheet 8, Revision 0, Waste Disposal System
- LR-18045-C, Sheet 9, Revision 1, Waste Disposal System
- LR-18045-C, Sheet 10, Revision 0, Waste Disposal System
- LR-18045-C, Sheet 16, Revision 0, Waste Disposal System, Concentrated Waste Transfer System

- LR-18045-C, Sheet 17, Revision 0, Waste Disposal System, Utility Collector Tank
- LR-69014-C, Sheet 1, Revision 0, Drywell Press & LvL, West Instrument Room El. 284'-0" (P&ID)
- LR-69014-C, Sheet 2, Revision 0, Drywell Press & Lvl, East Instrument Room El. 284' - 0"
- LR-69015-C, Sheet 1, Revision 0, Reactor Vessel Level, East Inst. Room El. 284'-0" (P&ID)
- LR-69015-C, Sheet 2, Revision 0, Reactor Vessel Level, West Inst. Room R.B. El. 284'-0" (P&ID)
- LR-69015-C, Sheet 3, Revision 0, Reactor Vessel Level, (Wide Range) & Pressure, West Inst. Room R.B. El. 284'-0"
- LR-F69015C, Sheet 4, Revision 0, RV Level & Pressure West Inst. Room (P&ID)
- LR-F69015C, Sheet 5, Revision 0, RV Level & Pressure East Inst. Room (P&ID)
- LR-F69015C, Sheet 6, Revision 0, RV Level and Core dP Lower Inst. Room (P&ID)
- LR-69017-C, Sheet 2, Revision 0, Emergency Condenser #11 Steam Flow, East Instrumentation Room, El. 284'-0" Reactor Building
- LR-69017-C, Sheet 3, Revision 0, Emergency Condenser #12 Steam Flow, West Instrumentation Room, El. 284'-0" Reactor Building
- LR-69020-C, Sheet 1, Revision 0, Reactor Recirc. Loop #11 Recirc. Flow, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 2, Revision 0, Reactor Recirc. Loop #12 Recirc. Flow, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 3, Revision 0, Reactor Recirc. Loop #13 Recirc. Flow, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 4, Revision 0, Reactor Recirc. Loop #14 Recirc. Flow, Instrument Room R.B. El. 237'-0" (P&ID)

- LR-69020-C, Sheet 5, Revision 0, Reactor Recirc. Loop #15 Recirc. Flow, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 6, Revision 0, Reactor Recirc. Pump #11 Seal Press, Lower Inst. Room R.B. El. 237' (P&ID)
- LR-69020-C, Sheet 7, Revision 0, Reactor Recirc. Pump #12 Seal Press, Lower Inst. Room R.B. El. 237' (P&ID)
- LR-69020-C, Sheet 8, Revision 0, Reactor Recirc. Pump #13 Seal Press, Lower Inst. Room R.B. El. 237' (P&ID)
- LR-69020-C, Sheet 9, Revision 0, Reactor Recirc. Pump #14 Seal Press, Lower Inst. Room R.B. El. 237' (P&ID)
- LR-69020-C, Sheet 10, Revision 0, Reactor Recirc. Pump #15 Seal Press, Lower Inst. Room R.B. El. 237' (P&ID)
- LR-69020-C, Sheet 11, Revision 0, Rx Recirc. Loop #11 Pump Diff. Press, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 12, Revision 0, Rx Recirc. Loop #12 Pump Diff. Press, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 13, Revision 0, Rx Recirc. Loop #13 Pump Diff. Press, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 14, Revision 0, Rx Recirc. Loop #14 Pump Diff. Press, Instrument Room R.B. El. 237'-0" (P&ID)
- LR-69020-C, Sheet 15, Revision 0, Rx Recirc. Loop #15 Pump Diff. Press, Instrument Room R.B. El. 237'-0" (P&ID)

Components Subject to an AMR

The component types requiring an AMR for the Radioactive Waste System and their intended functions are shown in Table 2.3.3.A.16-1. The AMR results for these component types are provided in Table 3.3.2.A-14.

Table 2.3.3.A.16-1
NMP1 Radioactive Waste System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Leakage Boundary (Spatial)
Flow Element	Structural Integrity (Attached)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Flood Barrier Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	NSR Structural Support Flood Barrier Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Separator	Leakage Boundary (Spatial)
Tanks	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached) NSR Structural Support
Valves	Pressure Boundary Flood Barrier Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.17 NMP1 REACTOR BUILDING CLOSED LOOP COOLING WATER SYSTEM

System Description

The NMP1 Reactor Building Closed Loop Cooling (RBCLC) Water System is designed to provide demineralized water to cool reactor auxiliary equipment located in the Primary Containment, Reactor Building, Turbine Building, and Waste Disposal Building. The closed loop permits isolation of systems containing radioactive liquids from the service water.

The RBCLC Water System consists of three redundant pumps, three redundant heat exchangers, flow control valves and associated piping, valves, instrumentation and controls. The pumps take suction from a common header and discharge to a common manifold where flow is routed to the heat exchangers. The cooling water is then piped to the various equipment loads, such as heat exchangers, coolers and condensers. The flow is then returned to the suction side of the pumps, thereby completing the closed loop. The RBCLC heat exchangers are cooled by the Service Water

System (Section 2.3.3.A.21). Low-conductivity water can be added to the system from the closed loop cooling makeup tank.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include the RBCLC pumps; Reactor Building Closed Loop Cooling heat exchangers; their interconnecting piping, flow components, and valves (including those to the closed cooling water make-up tank); and the piping and valves associated with the following system cooling loads:

- Reactor Recirculation pumps and motor coolers
- Spent Fuel Pool heat exchangers
- Non-regenerative heat exchanger
- Instrument Air compressor coolers and aftercoolers
- Containment (drywell) unit coolers
- Shutdown Cooling heat exchangers
- Shutdown Cooling pump coolers
- Drywell equipment drain tank coolers
- Reactor Building equipment drain tank cooler
- Reactor Water Cleanup demineralizer; non-regenerative heat exchanger; regenerative heat exchanger and reactor vessel sample coolers
- Waste Evaporator coolers

- Control Room HVAC chiller condenser coolers
- Condensate pump coolers
- Reactor feedwater pump jacket and lube oil coolers
- Reactor feedwater booster pump coolers
- Clean-up filter pre-coat cooler
- Clean-up sludge tank blower aftercooler
- Auxiliary clean-up pump bearing, oil, and pedestal coolers

The components subject to an AMR for this system also include the NSR piping, fittings, and equipment containing liquid in the Reactor Building, Radwaste, which include the vents and drains off the pumps, heat exchangers, and various equipment. The components subject to AMR in the Turbine Building include the seal water lines to the electric feed pumps, the supply/return lines to the Radwaste Building and the supply/return lines to Off Gas Vacuum Pumps. The components subject to AMR in theWaste Disposal Building include lines of a diameter of 3" diameter or larger and their associated valves, and the following equipment anchors: Concentrator Condenser, HTX-45-205, HTX-45-218, and HTX-98-30.

USAR Reference(s)

More information about the RBCLC Water System can be found in USAR Section X.D.

License Renewal Drawing(s)

Components requiring an AMR for the RBCLC Water System are highlighted on the following drawings:

- LR-18006-C, Sheet 3, Revision 1, Drywell and Torus, Isolation Valves
- LR-18008-C, Revision 1, Spent Fuel Storage Pool, Filtering and Cooling System
- LR-18009-C, Sheet 1, Revision 1, Reactor Clean-Up System
- LR-18009-C, Sheet 2, Revision 1, Reactor Clean-Up System

- LR-18011-C, Sheet 2, Revision 1, Instrument Air System
- LR-18014-C, Sheet 1, Revision 1, Reactor Containment (Drywell & Torus) Inert Gas (N2) Purge and Fill, Drywell Cooling System
- LR-18018-C, Sheet 1, Revision 1, Reactor Shutdown Cooling
- LR-18018-C, Sheet 2, Revision 1, Reactor Shutdown Cooling
- LR-18020-C, Revision 1, Reactor Recirculation Loops, (Typical of 5)
- LR-18022-C, Sheet 2, Revision 1, Reactor Bldg., Closed Loop Cooling System
- LR-18022-C, Sheet 3, Revision 1, Turbine Building Closed Loop Cooling System
- LR-18022-C, Sheet 4, Revision 0, Waste Buildings Closed Loop Cooling System
- LR-18041-C, Sheet 2, Revision 1, Sampling Points, Liquids-Shutdown Cooling, Fuel Pool Clean-Up & Liquid Poison Systems
- LR-18041-C, Sheet 7, Revision 1, Sampling Points, Reactor Vessel, Post Accident
- LR-18045-C, Sheet 7, Revision 1, Waste Disposal System
- LR-18047-C, Revision 0, Control Room, Heating Ventilating & Air Conditioning System

Components Subject to an AMR

The component types requiring an AMR for the RBCLC Water System and their intended functions are shown in Table 2.3.3.A.17-1. The AMR results for these component types are provided in Table 3.3.2.A-15.

Table 2.3.3.A.17-1
NMP1 Reactor Building Closed Loop Cooling Water System

Component Type	Intended Functions
Actuator	Pressure Boundary
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)

Component Type	Intended Functions
Filters/Strainers	Filter Pressure Boundary Structural Integrity (Attached)
Flow Elements	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Orifices	Throttle Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Temperature Elements	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.18 NMP1 REACTOR BUILDING HVAC SYSTEM

System Description

The NMP1 Reactor Building HVAC System is designed to control the Reactor Building atmosphere within limits during normal and emergency operating conditions. Additionally, the system is an alternative system for venting the primary containment to the atmosphere, if necessary. The Reactor Building HVAC System consists of the Reactor Building Normal Ventilation System and the Reactor Building Emergency Ventilation System. Further information on these systems is provided below.

The Reactor Building Normal Ventilation System provides clean fresh air to the Reactor Building, removes air from areas where excessive heat concentration and potential airborne contamination exist, and maintains a negative pressure in the Reactor Building relative to the atmosphere by regulating the amount of outside air introduced into the building. The clean air is required to remove air from areas where excessive heat concentration exists. Normal ventilation supply is accomplished by fans that take air from the outside atmosphere and supply it to the Reactor Building, and exhaust non-contaminated air from the Reactor Building to the atmosphere through the stack. The normal ventilation system automatically isolates upon initiation of the emergency ventilation system.

The Reactor Building Emergency Ventilation System removes air from areas where excessive heat concentration and potential airborne contamination exists, maintains a negative pressure in the Reactor Building relative to atmosphere, and removes and filters contaminated air during accident conditions. The Reactor Building Emergency Ventilation System is a standby system consisting of redundant filter trains, which operates in the event of an accident or normal ventilation failure. Emergency ventilation is accomplished by fans that exhaust air from the Reactor Building through a filter bank to the atmosphere through the stack. This system can also be used to process the drywell and torus atmospheres when venting.

The Reactor Building HVAC system is in scope for license renewal for the following reasons:

- It performs a safety-related function(s) per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include the inlet and exhaust dampers and exhaust ductwork of the Reactor Building Normal Ventilation System and the entire Reactor Building Emergency Ventilation System. USAR Reference(s)

More information about the Reactor Building HVAC System can be found in USAR Sections VI.E.2 and VII.H.

License Renewal Drawing(s)

Components requiring an AMR for the Reactor Building HVAC System are highlighted on the following drawings:

- LR-18013-C, , Revision 1, Reactor Building Heating Cooling and Ventilating System P&ID
- LR-69013-C, Sheet 1, Revision 0, Reactor Building Emergency Vent Flow Turbine Building Elevation 302'-8" Instrument Diagram
- LR-69013-C, Sheet 2, Revision 0, Reactor Building Emergency Vent. System Turbine Building Elevation 261'-0" Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Reactor Building HVAC System and their intended functions are shown in Table 2.3.3.A.18-1. The AMR results for these component types are provided in Table 3.3.2.A-16.

Table 2.3.3.A.18-1
NMP1 Reactor Building HVAC System

Component Type	Intended Functions
Blowers	Pressure Boundary
Bolting	Pressure Boundary
Ducting	Pressure Boundary
Filters	Filter Pressure Boundary
Flow Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary
Temperature Elements	Pressure Boundary
Valves and Dampers	Fire Barrier Pressure Boundary

2.3.3.A.19 NMP1 REACTOR WATER CLEANUP SYSTEM

System Description

The NMP1 Reactor Water Cleanup System is designed to maintain high reactor water purity in order to: minimize deposits on fuel clad surfaces by reducing the amount of water-borne impurities in the primary system; and reduce the secondary sources of beta and gamma radiation resulting from the deposition of corrosion products, fission products, and impurities in the primary system.

The Reactor Water Cleanup System continuously purifies a portion of the reactor recirculation flow and reactor bottom head drain flow with a minimum of heat loss from the cycle. Water is normally removed at reactor pressure from one of the reactor recirculation loops and the reactor bottom head drain line, cooled in regenerative and non-regenerative heat exchangers, reduced in pressure, filtered, demineralized, and pumped through the shell side of the regenerative heat exchanger to the RPV through the FW/HPCI System (Section 2.3.4.A.3). Whenever reactor pressure is insufficient to maintain suction pressure at the main cleanup pumps, an auxiliary pump is used.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include the piping and valves from the containment isolation valves inboard to the system connections with Reactor Recirculation Loop A and the Feedwater System; the piping and valves from the relief valve to the end of the penetration inside containment for the system relief valve downstream of the pressure control valve after the non-regenerative heat exchanger; and the RBCLC pressure boundaries of the non-regenerative heat exchanger. The components subject to an AMR for this system also include the NSR piping and fittings, valves and equipment for the remaining portions of the Reactor Water Clean-up System. <u>USAR Reference(s)</u>

More information about the Reactor Water Cleanup System can be found in USAR <u>Section X.B</u>.

<u>License Renewal Drawing(s)</u>

Components requiring an AMR for the Reactor Water Cleanup System are highlighted on the following drawings:

- <u>LR-18002-C, Sheet 1, Revision 1, Steam Flow, Main Steam & High Press. Turbine</u>

- <u>LR-18005-C, Sheet 2, Revision 1, Feedwater Flow, High Pressure</u>

- <u>LR-18006-C, Sheet 1, Revision 1, Drywell & Torus, Isolation & Blocking Valves</u>

- <u>LR-18006-C, Sheet 2, Revision 0, Drywell & Torus, Isolation Valves</u>

- <u>LR-18009-C, Sheet 1, Revision 1, Reactor Clean-Up System</u>

- <u>LR-18009-C, Sheet 2, Revision 1, Reactor Clean-Up System</u>

Components Subject to an AMR

The component types requiring an AMR for the Reactor Water Cleanup System and their intended functions are shown in Table 2.3.3.A.19-1. The AMR results for these component types are provided in Table 3.3.2.A-17.

Table 2.3.3.A.19-1
NMP1 Reactor Water Cleanup System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Heat Exchangers	Pressure Boundary Leakage Boundary (Spatial)
Filters	Leakage Boundary (Spatial)
Flow Elements	Leakage Boundary (Spatial)
Flow Gauges	Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.20 NMP1 SAMPLING SYSTEM

System Description

The NMP1 Sampling System provides for the sampling of liquid, steam and gases from various systems in the plant under all operating modes.

The Sampling System consists of pumps, coolers and associated piping (including tubing), valves, instrumentation and controls. Liquid samples can be obtained from the RPV, Spent Fuel Pool, Reactor Water Cleanup, Core Spray, Torus, Liquid Poison, Condensate, Feedwater, RBCLC, Turbine Building Closed Loop Cooling, Circulating Water, Radioactive Waste Disposal and Make-up Systems. Steam samples from the Main Steam System are obtainable. Gaseous samples can be obtained from Primary Containment, Vent Stack and Off Gas Systems.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR include the sample coolers, the blocking valves for RBCLC samples from the Shutdown Cooling heat exchangers and the Non-Regenerative heat exchanger, the blocking valves for the RPV sample containment penetration and its associated rupture disc, and the Post-Accident Sampling System reactor core sample isolation valve. The components subject to an AMR for this system also include the NSR piping, fittings, and valves associated with fluid systems sampling lines in the Reactor Building, Screen and Pump House Building, and Turbine Building,

USAR Reference(s)

More information about the Sampling System can be found in USAR Section VIII.C.3.

License Renewal Drawing(s)

Components requiring an AMR for the Sampling System are highlighted on the following drawings:

- LR-18041-C, Sheet 1, Revision 1, Sampling Points, Main Steam, Feedwater & Condensate
- LR-18041-C, Sheet 2, Revision 1, Sampling Points, Liquids-Shutdown Cooling, Fuel Pool Clean-Up & Liquid Poison Systems
- LR-18041-C, Sheet 4, Revision 0, Sampling Points, Containment Spray, Core Spray and Circulating Water
- LR-18041-C, Sheet 7, Revision 1, Sampling Points, Reactor Vessel, Post Accident

Components Subject to an AMR

The component types requiring an AMR for the Sampling System and their intended functions are shown in Table 2.3.3.A.20-1. The AMR results for these component types are provided in Table 3.3.2.A-18.

Table 2.3.3.A.20-1
NMP1 Sampling System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Heat Exchangers	Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Rupture Disc	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.21 NMP1 SERVICE WATER SYSTEM

System Description

The NMP1 Service Water System is designed to provide a reliable supply of cooling water to various safety and non-safety related components and systems. Systems cooled by the Service Water System include the RBCLC Water System (Section 2.3.3.A.17), Turbine Building Closed Loop Cooling Water System (Section 2.3.3.A.25), Reactor Building HVAC System (Section 2.3.3.A.18), Turbine Building HVAC System (Section 2.3.3.A.26), and Radioactive Waste Disposal Building HVAC System (Section 2.3.3.A.15). Service Water also is supplied to the screenwash pumps, the Radwaste Solidification and Storage Building, and the makeup demineralizer.

The Service Water System consists of two service water pumps, two emergency service water pumps, strainers and associated piping, valves, instrumentation and controls. Under normal plant operation, the service water pumps take suction from the pump wells located in the Screen and Pump House Building (Section 2.4.A.9) and discharge cooling water through strainers into the service water headers. These headers route the water to the various loads cooled by the Service Water System. The water is then discharged into the discharge tunnel. In the event of a loss of offsite power, the service water requirements for the RBCLC heat exchangers (SR loads) would be met by the emergency service water pumps. These pumps take suction from independent pump wells and discharge only to the header supplying the RBCLC heat exchangers. The discharge line of one of the emergency service water pumps can be supplied, via a manually installed spool piece, by the diesel fire pump.

The Service Water System is injected with chemicals to control biological growth by the Chemical Injection System. Sodium hypochlorite and sodium bromide are injected on a routine basis via this system which consists of storage tanks, pumps, piping, fittings and valves. Treatments for zebra mussels are performed periodically via a separate portion of the Chemical Injection System which consists of an injection tank, pumps, piping, fittings and valves. Except for the tanks, the majority of the components of this system are skid mounted. This system is manually operated to provide treatment to the Service Water System.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR are the emergency service water pumps, the supply and return piping for the RBCLC heat exchangers, and the supply piping to the containment drywell, inclusive of the applicable system valves. The components subject to an AMR for this system also include the NSR portion of the system including service water pumps, valves, piping and fittings, strainers, flow elements and heat exchangers located in the Offgas Building, Reactor Building, Screen and Pump House Building, and Turbine Building. The components of the Chemical Injection System that are subject to AMR are the NSR pumps, piping, fittings and valves in the Screen and Pump House Building from the wall penetration for the storage tank to the floor penetration for injection into the Service Water System.

USAR Reference(s)

More information about the Service Water System can be found in USAR Section X.F.

License Renewal Drawing(s)

Components requiring an AMR for the Service Water System are highlighted on the following drawings:

- LR-18006-C, Sheet 3, Revision 1, Drywell and Torus, Isolation Valves
- LR-18010-C, Sheet 5, Revision 0, Main Condenser Water Box Air Removal
- LR-18014-C, Sheet 4, Revision 1, Reactor Containment Drywell & Torus Inert Gas (N2) Supply No. 12
- LR-18022-C, Sheet 1, Revision 1, Service Water, Reactor & Turbine Bldgs.
- LR-18022-C, Sheet 5, Revision 0, Service Water, Reactor & Turbine Bldgs.
- LR-18027-C, Sheet 1, Revision 1, Service Water, Turbine and Administration Buildings
- LR-18027-C, Sheet 2, Revision 0, Service Water, Reactor Building
- LR-18027-C, Sheet 3, Revision 0, Service Water, Off Gas and Waste Disposal Buildings
- LR-18030-C, Sheet 3, Revision 1, Fire Protection Water System

Components Subject to an AMR

The component types requiring an AMR for the Service Water System and their intended functions are shown in Table 2.3.3.A.21-1. The AMR results for these component types are provided in Table 3.3.2.A-19.

Table 2.3.3.A.21-1
NMP1 Service Water System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

Component Type	Intended Functions
Filters/Strainers	Pressure Boundary Filter Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Flow Elements	Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.22 NMP1 SHUTDOWN COOLING SYSTEM

System Description

The NMP1 Shutdown Cooling System is designed to cool reactor water below temperatures and pressures at which the main condenser may be used as a heat sink following reactor shutdown. This system provides the capability to achieve and maintain a cold shutdown condition by removal of reactor fission product decay heat.

The Shutdown Cooling System consists of reactor coolant isolation valves, three redundant loops each having a pump, heat exchanger and flow control valve, and associated piping, valves, instrumentation and controls. Reactor water enters this system from the suction side of one of the reactor recirculation pumps, flows through the partial-capacity shutdown cooling system loops, then discharges into the discharge side of another recirculation loop pump. The heater exchangers are cooled by the RBCLC Water System (Section 2.3.3.A.17).

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The entire mechanical portion of the Shutdown Cooling System is subject to AMR,extending from the Reactor Recirculation System inlet to the Reactor Recirculation return. Components subject to AMR include the shutdown cooling pumps (and their coolers), the Shutdown Cooling heat exchangers, and the inclusive piping and fittings, flow components, and valves. USAR Reference(s)

More information about the Shutdown Cooling System can be found in USAR Section X.A.

License Renewal Drawing(s)

Components requiring an AMR for the Shutdown Cooling System are highlighted on the following drawings:

- LR-18006-C, Sheet 1, Revision 1, Drywell & Torus, Isolation Valves
- LR-18007-C, Sheet 2, Revision 1, Reactor Core Spray
- LR-18018-C, Sheet 1, Revision 1, Reactor Shutdown Cooling
- LR-18018-C, Sheet 2, Revision 1, Reactor Shutdown Cooling System, Reactor Vessel Hydro Heat-up System
- LR-18022-C, Sheet 2, Revision 1, Reactor Bldg., Closed Loop Cooling System
- LR-45136-C, Sheet 2B, Revision 0, Instrumentation, Valve Schedule

Components Subject to an AMR

The component types requiring an AMR for the Shutdown Cooling System and their intended functions are shown in Table 2.3.3.A.22-1. The AMR results for these component types are provided in Table 3.3.2.A-20.

Table 2.3.3.A.22-1
NMP1 Shutdown Cooling System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary
Flow Elements	Leakage Boundary (Spatial)
Heat Exchangers	Heat Transfer Pressure Boundary Leakage Boundary (Spatial)

Component Type	Intended Functions
Orifices	Throttle , Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial)

2.3.3.A.23 NMP1 SPENT FUEL POOL FILTERING AND COOLING SYSTEM

System Description

The NMP1 Spent Fuel Pool Filtering and Cooling System is designed to remove decay heat from the spent fuel assemblies' and the impurities from the pool water. This system maintains the temperature and purity of the spent fuel pool water at acceptable levels

The Spent Fuel Pool Filtering and Cooling System pumps take suction from the skimmer surge tanks and circulate the pool water through two parallel loops, each consisting of a precoat type filter and a heat exchanger. The water is returned to the pool through diffusers. One circulation loop is adequate to handle the heat load imposed by the system during normal spent-fuel storage. The other circulation loop acts as a standby. Cooling water is supplied to the heat exchangers from the RBCLC Water System (Section 2.3.3.A.17). Makeup water to the spent fuel storage pool is provided by the Condensate and Condensate Transfer System (Section 2.3.4.A.1). The Spent Fuel Pool Filtering and Cooling System is also used after reactor refueling to drain the reactor internals storage pit and head cavity. Alternate lines allow transport of the water to either the main condenser or to the waste disposal system for processing.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include the Spent Fuel Pool surge tanks, the recirculating pumps and their suction strainers, the heat exchangers, the filters, the piping to and from the Spent Fuel Pool connecting these components, and the inclusive flow components and valves. The spent fuel pool itself is included as part of the Reactor Building structure. The components subject to an AMR for this system also include the NSR Clean-up Demineralizers and associated piping and fittings, pumps, valves, tanks and filters; the piping and fittings, valves, tanks and pumps associated with the filter pre-coat portion of the system; the piping and fittings, valves, tanks and pumps in the Reactor Building interfacing with the Waste Disposal System; and pipes and fittings leading to Reactor Building drains..

USAR Reference(s)

More information about the Spent Fuel Pool Filtering and Cooling System can be found in USAR Section X.H.

License Renewal Drawing(s)

Components requiring an AMR for the Spent Fuel Pool Filtering and Cooling System are highlighted on the following drawings:

- LR-18008-C, Revision 1, Spent Fuel Storage Pool, Filtering and Cooling System
- LR-18009-C, Sheet 1, Revision 1, Reactor Clean-up System
- LR-18036-C, Revision 1, Sealing Water for Turbine Bldg., Waste Bldg., Reactor Bldg. & Screen House
- LR-18041-C, Sheet 2, Revision 1, Sampling Points, Liquids-Shutdown Cooling, Fuel Pool Clean-Up & Liquid Poison Systems
- LR-18045-C, Sheet 7, Revision 1, Waste Disposal System
- LR-45136-C, Sheet 8, Revision 0, Instrumentation, Valve Schedule

Components Subject to an AMR

The component types requiring an AMR for the Spent Fuel Pool Filtering and Cooling System and their intended functions are shown in Table 2.3.3.A.23-1. The AMR results for these component types are provided in Table 3.3.2.A-21.

Table 2.3.3.A.23-1
NMP1 Spent Fuel Pool Filtering and Cooling System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Filters/Strainers	Filter Pressure Boundary
Flow Elements	Pressure Boundary
Flow Gauge	Leakage Boundary (Spatial)
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Tanks	Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.24 NMP1 TECHNICAL SUPPORT CENTER HVAC SYSTEM

System Description

The NMP1 Technical Support Center HVAC System is designed to maintain the Technical Support Center temperature and supply tempered, re-circulated, and outside air to maintain a suitable environment for emergency response personnel. The Technical Support Center HVAC System consists of supply, circulating, exhaust and smoke purge fans, various filters, electric heater, cooling coil and associated ductwork, dampers, instrumentation and controls. During the normal mode of operation, air is drawn into the system through a louvered intake, electric heater, filter and cooling coil to the circulating fan. This fan discharges air to the Technical Support Center. Air is exhausted through the exhaust fan to the environment. In the emergency mode, the normal mode flow path isolates and the supply fan draws air through a separate louvered intake. The air is then directed through a pre-filter, HEPA filter, charcoal filter and a second HEPA filter to the suction of the circulating fan. There is no direct exhaust path in the emergency mode as the Technical Support Center is maintained at a positive pressure. The HVAC system also has a separate exhaust path for the removal of smoke.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Technical Support Center HVAC System can be found in USAR Section III.E.1.2.2.

License Renewal Drawing(s)

None (See Components Subject to an AMR below)

Components Subject to an AMR

The in-scope components for the Technical Support Center HVAC System are active components. Therefore, there are no components requiring an AMR for the Technical Support Center HVAC System.

2.3.3.A.25 NMP1 TURBINE BUILDING CLOSED LOOP COOLING WATER SYSTEM

System Description

The NMP1 Turbine Building Closed Loop Cooling (TBCLC) Water System provides demineralized water to cool various non-safety related auxiliary equipment in the Turbine Building in support of power generation. The closed loop provides isolation of systems containing radioactive liquids from the service water, which returns to the lake.

The TBCLC Water System consists of two redundant pumps, three half-capacity heat exchangers, three temperature-controlled flow control valves and associated piping, valves, instrumentation and controls. The flow path begins at the pumps where water is discharged through the flow control valves to the heat exchangers and on to the system loads. Water then returns to the suction of the TBCLC pumps. The heat exchangers are cooled by service water. Low-conductivity water can be added to the TBCLC System from the closed loop cooling makeup tank, which is shared with the RBCLC Water System (Section 2.3.3.A.17).

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The entire mechanical portion of the TBCLC Water System is subject to AMR. The components subject to an AMR include the NSR piping and fittings, valves, pumps, strainers, tanks, and heat exchangers.

USAR Reference(s)

More information about the TBCLC Water System can be found in USAR Section X.E.

License Renewal Drawing(s)

Components requiring an AMR for the TBCLC Water System are highlighted on the following drawings:

- LR-18011-C, Sheet 2, Revision 1, Instrument Air System
- LR-18022-C, Sheet 3, Revision 1, Turbine Building Closed Loop Cooling System

Components Subject to an AMR

The component types requiring an AMR for the TBCLC Water System and their intended functions are shown in Table 2.3.3.A.25-1. The AMR results for these component types are provided in Table 3.3.2.A-22.

Table 2.3.3.A.25-1
NMP1 Turbine Building Closed Loop Cooling Water System

Component Type	Intended Functions
Bolting	Leakage Boundary(Spatial) Structural Integrity (Attached)
Filters/Strainers	Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Tank	Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Valves	Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.A.26 NMP1 TURBINE BUILDING HVAC SYSTEM

System Description

The NMP1 Turbine Building HVAC System is designed to provide a continuous flow of fresh tempered air throughout the building, while maintaining a negative atmospheric pressure. This system also has heat and smoke removal capability for three smoke zones and the upper elevation of the Turbine Building.

The Turbine Building HVAC System consists of air intakes, filters, electric heating units, flow control dampers, dampers, and ductwork to distribute air to various areas in the Turbine Building. Outside air is taken in through louvered, screened penthouses, which supply air to the Turbine Building HVAC supply fans. The air then passes through filters and heating coils. Exhaust air is directed through a plenum to the stack for discharge and is monitored for radiation. The exhaust system discharges into the plenum, which also receives air from the containment and other buildings. The smoke removal function of the Turbine Building HVAC System consists of three independent air make-up fans, dampers and ductwork (one for each smoke zone) and automatic isolation dampers and exhaust fans of the normal ventilation system. In addition, there are twelve motor operated roof vents and five sidewall vents.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR are the inlet dampers for the supply fans and the outlet dampers for the exhaust fans; smoke removal components including three independent air make-up fans (one for each smoke zone) and associated ductwork and dampers; and Turbine Building roof and sidewall vents.

USAR Reference(s)

More information about the Turbine Building HVAC System can be found in USAR Section III.A.2.2.

License Renewal Drawing(s)

Components requiring an AMR for the Turbine Building HVAC System are highlighted on the following drawings:

- LR-18010-C, Sheet 1, Revision 1, Main Condenser Air Removal & Off Gas System
- LR-18021-C, Sheet 1, Revision 0, Turbine Building Heating Cooling And Ventilating Systems P&ID
- LR-18021-C, Sheet 2, Revision 0, Turbine Building Heating Cooling And Ventilating Systems Air Conditioning Systems For Lab. Areas P&ID
- LR-18021-C, Sheet 3, Revision 0, Off-Gas Building, Ventilation Systems

Components Subject to an AMR

The component types requiring an AMR for the Turbine Building HVAC System and their intended functions are shown in Table 2.3.3.A.26-1. The AMR results for these component types are provided in Table 3.3.2.A-23.

Table 2.3.3.A.26-1
NMP1 Turbine Building HVAC System

Component Type	Intended Functions
Blowers	Gaseous Release Path Pressure Boundary
Bolting	Gaseous Release Path Pressure Boundary
Ducting	Gaseous Release Path Pressure Boundary
Muffler	Gaseous Release Path
Valves and Dampers	Gaseous Release Path Pressure Boundary
Vents	Gaseous Release Path

2.3.3.A.27 NMP1 ELECTRIC STEAM BOILER SYSTEM

System Description

The NMP1 Electric Steam Boiler System is designed to supply saturated steam to the radwaste concentrator #12 heat exchanger to support the processing of radioactive waste, the nitrogen vaporizer to support drywell inerting, and the Turbine Building decontamination area to support decontamination activities. The system includes a condensate receiver which supplies the condensate to the boiler for generation of saturated steam. The steam is routed through steam piping to the above loads. The system consists of a condensate receiver, condensate cooler, boiler feed pump, electric boiler, and associated piping, fittings, valves and instrumentation and controls.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The portions of the Electric Steam Boiler System containing components subject to AMR are portions of the NSR piping, fittings, strainer and valves in the condensate supply line, the electric boiler and level gauge, and the steam discharge piping, fittings, drain trap and valves to the nitrogen vaporizer, and #12 waste concentrator piping in the Off-Gas Building.

<u>USAR Reference(s)</u>

<u>None</u>

<u>License Renewal Drawings</u>

Components requiring an AMR for the Electric Steam Boiler System are highlighted on the following drawings:

- <u>LR-18014-C, Sheet 4, Revision 1, Reactor Containment, Drywell and Torus Inert Gas N2 Supply No. 12</u>
- <u>LR-18043-C, Sheet 1, Revision 0, Steam Supply System, Electric Boiler & Condensate Receiver</u>
- <u>LR-18043-C, Sheet 2, Revision 0, Steam Supply System, Electric Boiler & Condensate Receiver</u>

<u>Components Subject to an AMR</u>

The components types requiring an AMR for the NMP1 Electric Steam Boiler System and their intended functions are shown in <u>Table 2.3.3.A.27-1</u>. The AMR results for these components types are provided in Table 3.3.2.A-24.

Table 2.3.3.A.27-1
NMP1 Electric Steam Boiler System

Component Type	Intended Function
Boiler	Leakage Boundary (Spatial)
Bolting	Leakage Boundary(Spatial)
Drain Trap	Leakage Boundary (Spatial)
Level Gauge	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Strainer	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.A.28 NMP1 MAKEUP DEMINERALIZER SYSTEM

System Description

The NMP1 Makeup Demineralizer System is designed to supply batches of demineralized water to fill the demineralized water makeup tank, the condensate storage tanks, and other reservoirs as necessary. It also provides water directly to the Liquid Poison System, Laboratories and Sample Sinks, and the Stator Winding Liquid Cooling System. Demineralized water from this system can be used as an alternate source for several plant systems, including the Reactor Water Cleanup and Control Rod Drive Systems.

The Makeup Demineralizer System utilizes a portable skid- or truck-mounted demineralized water unit to process service water or city water for use in the station. Water is processed through several components acting as tanks (i.e. precipitator, clearwell, filter and purifier) while being pumped to the portable demineralized water unit. The discharge of the portable unit is directed to the demineralized water storage tank and then to the condensate storage tanks and/or other system loads.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the function identified in 10 CFR 54.4(a) (1).

The portion of the Makeup Demineralizer System containing components subject to AMR include the NSR piping, fittings and valves from the connections to the Service Water and City Water Systems, through the various tanks and pumps, to the makeup demineralized water storage tank and to the other system loads. The portable demineralized water unit is not WSLR.

USAR Reference(s)

More information about the Makeup Demineralizer System can be found in USAR Section X.G.1.0.

License Renewal Drawing(s)

Components requiring an AMR for the Makeup Demineralizer System are highlighted on the following drawings:

- LR-18034-C, Sheet 1, Revision 1, Makeup Demineralizer
- LR-18034-C, Sheet 2, Revision 0, Makeup Demineralizer

Components Subject to an AMR

The components types requiring an AMR for the Makeup Demineralizer System and their intended function are shown in Table 2.3.3.A.28-1. The AMR results for these components types are provided in Table 3.3.2.A-25.

Table 2.3.3.A.28-1
NMP1 Makeup Demineralizer System

Component Type	Intended Function
Bolting	Leakage Boundary (Spatial)
Level Gauge	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.B NMP2 AUXILIARY SYSTEMS

NMP2 Auxiliary Systems are those systems used to support normal and emergency plant operations. The systems provide cooling, ventilation, sampling, and other required functions. The following systems are included in this subsection:

- NMP2 Air Startup - Standby Diesel Generator System (Section 2.3.3.B.1)
- NMP2 Alternate Decay Heat Removal System (Section 2.3.3.B.2)
- NMP2 Auxiliary Service Building HVAC System (Section 2.3.3.B.3)
- NMP2 Chilled Water Ventilation System (Removed) (Section 2.3.3.B.4)
- NMP2 Compressed Air Systems (Section 2.3.3.B.5)
- NMP2 Containment Atmosphere Monitoring System (Section 2.3.3.B.6)
- NMP2 Containment Leakage Monitoring System (Section 2.3.3.B.7)
- NMP2 Control Building Chilled Water System (Section 2.3.3.B.8)
- NMP2 Control Building HVAC System (Section 2.3.3.B.9)
- NMP2 Diesel Generator Building Ventilation System (Section 2.3.3.B.10)
- NMP2 Domestic Water System (Section 2.3.3.B.11)
- NMP2 Engine-Driven Fire Pump Fuel Oil System (Section 2.3.3.B.12)
- NMP2 Fire Detection and Protection System (Section 2.3.3.B.13)
- NMP2 Floor and Equipment Drains System (Section 2.3.3.B.14)
- NMP2 Generator Standby Lube Oil System (Section 2.3.3.B.15)
- NMP2 Glycol Heating System (Removed) (Section 2.3.3.B.16)
- NMP2 Hot Water Heating System (Section 2.3.3.B.17)
- NMP2 Makeup Water System (Section 2.3.3.B.18)
- NMP2 Neutron Monitoring System (Section 2.3.3.B.19)

- NMP2 Primary Containment Purge System (Section 2.3.3.B.20)
- NMP2 Process Sampling System (Section 2.3.3.B.21)
- NMP2 Radiation Monitoring System (Section 2.3.3.B.22)
- NMP2 Reactor Building Closed Loop Cooling Water System (Section 2.3.3.B.23)
- NMP2 Reactor Building HVAC System (Section 2.3.3.B.24)
- NMP2 Reactor Water Cleanup System (Section 2.3.3.B.25)
- NMP2 Seal Water System (Removed) (Section 2.3.3.B.26)
- NMP2 Service Water System (Section 2.3.3.B.27)
- NMP2 Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.B.28)
- NMP2 Standby Diesel Generator Fuel Oil System (Section 2.3.3.B.29)
- NMP2 Standby Diesel Generator Protection (Generator) System (Section 2.3.3.B.30)
- NMP2 Standby Liquid Control System (Section 2.3.3.B.31)
- NMP2 Yard Structures Ventilation System (Section 2.3.3.B.32)
- NMP2 Auxiliary Boiler System (Section 2.3.3.B.33)
- NMP2 Circulating Water System (Section 2.3.3.B.34)
- NMP2 Makeup Water Treatment System (section 2.3.3.B.35)
- NMP2 Radioactive Liquid Waste Management System (Section 2.3.3.B.36)
- NMP2 Roof Drainage System (Section 2.3.3.B.37)
- NMP2 Sanitary Drains and Disposal System (Section 2.3.3.B.38)
- NMP2 Service Water Chemical Treatment System (Section 2.3.3.B.39)

- NMP2 Turbine Building Closed Loop Cooling System (2.3.3.B.40)

2.3.3.B.1 NMP2 AIR STARTUP STANDBY DIESEL GENERATOR SYSTEM

System Description

The NMP2 Air Startup-Standby Diesel Generator System includes the Diesel Generator Combustion Air Intake and Exhaust System. It is designed to provide 1) a sufficient volume and pressure of compressed air to enable the Emergency Diesel Generator to start within the required times; and 2) reliable combustion air intake and exhaust paths that supply clean air for combustion and a means to discharge exhaust gases outside the diesel generator building. Each Standby Diesel Generator has redundant air starting systems, either of which is capable of starting the engine.

The flowpaths for the Division I/II and Division III generators are similar, in that each air compressor supplies compressed ambient air to its air receiver through an air dryer. From there, compressed air is supplied to the air start motors through pressure control valves and, in the case of the Division I/II standby diesel generators, a moisture separator.

To supply combustion air and an exhaust path, fresh air is drawn from outside and passes through an intake filter and an intake silencer located just inside the Diesel Generator Building. The air then passes through the overspeed trip valve, an exhaust driven turbocharger, through a pair of combination intercooler-heaters and then is distributed to each cylinder bank through the engine intake manifolds. Exhaust gases are discharged to the atmosphere above the Diesel Generator Building.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the following:

- For Division I & II: In general, they include all piping and components between the reducer on the downstream side of the flexible hose connection from the air drier to the receivers and the standby diesel generators. Included are piping segments and gate valves upstream of two of the receivers in the cross connect with the respective redundant air system as well as downstream of the pressure control valves leading to the turning gear motor. The list of components consists, in part, of various hand operated valves; air receivers with pressure relief and moisture blow down valves; pressure control valves; and moisture separators and their associated drain valves. For the Combustion Air Intake and Exhaust System, components include the generator inlet filters, relief vents, expansion bellows, inlet and exhaust piping, and atmospheric exhausts.

- For Division III: In general, they include all piping and components between the check valve on the downstream side of the flexible hose connection from the air drier to the receivers and the high pressure core spray diesel generator. The list of components consists, in part, of various hand operated valves; two air receivers with pressure relief and moisture blow down valves; pressure control valves, starting air lubricators and air operated valves. For the Combustion Air Intake and Exhaust System, components include generator inlet filters, relief vents, expansion bellow, and atmospheric exhausts.

- For Division I, II and III: The components subject to AMR also include the NSR piping, fittings and expansion joints from the SR/NSR interface up to, and including, the expansion joints.

USAR Reference(s)

More information about the Air Startup-Standby Diesel Generator System can be found in USAR Sections 9.5.6 and 9.5.8.

License Renewal Drawing(s)

Components requiring an AMR for the Air Startup-Standby Diesel Generator System are highlighted on the following drawing:

- LR-104, Sheet A, Revision 1, Standby Diesel Gen. System

Components Subject to an AMR

The component types requiring an AMR for the Air Startup-Standby Diesel Generator System and their intended functions are shown in Table 2.3.3.B.1-1. The AMR results for these component types are provided in Table 3.3.2.B-1.

Table 2.3.3.B.1-1
NMP2 Air Startup-Standby Diesel Generator System

Component Type	Intended Functions
Bolting	Pressure Boundary
Diesel Engine Air Start Motors	Pressure Boundary
Expansion Joints	Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Moisture Air Separators	Pressure Boundary
Mufflers	Pressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Starting Air Lubricator	Pressure Boundary
Tanks	Pressure Boundary
Valves	Pressure Boundary

2.3.3.B.2 NMP2 ALTERNATE DECAY HEAT REMOVAL SYSTEM

System Description

The NMP2 Alternate Decay Heat Removal System, in conjunction with natural circulation, is designed to remove the decay heat released from the spent fuel pool, reactor core, reactor internals storage pool, and cavity during refueling outages to maintain reactor coolant temperatures suitable for refueling.

The Alternate Decay Heat Removal System accomplishes its design function by utilizing a primary loop for removing decay heat from the Spent Fuel Pool and the reactor core and a secondary loop to transfer the decay heat to the atmosphere. The primary loop draws water from the Spent Fuel Pool, pumps it through heat exchangers, and returns the cooled water to the reactor cavity and the Spent Fuel Pool via the Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.B.28) spargers. The secondary loop transfers heat from the plate heat exchangers to the atmosphere via the mechanical draft cooling towers.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include piping and associated components starting at the Spent Fuel Pool including check valves, hand operated valves, pumps, fittings, bolting and heat exchangers up to the containment isolation check valves inside the Reactor Building.

USAR Reference(s)

More information about the Alternate Decay Heat Removal System can be found in USAR Section 9.1.6.

License Renewal Drawing(s)

Components requiring an AMR for the Alternate Decay Heat Removal System are highlighted on the following drawing:

- LR-115, Sheet A, Revision 1, Alternate Decay Heat Removal System

Components Subject to an AMR

The component types requiring an AMR for the Alternate Decay Heat Removal System and their intended functions are shown in Table 2.3.3.B.2-1. The AMR results for these component types are provided in Table 3.3.2.B-2.

Table 2.3.3.B.2-1
NMP2 Alternate Decay Heat Removal System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Flow Elements	Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)

Component Type	Intended Functions
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.3 NMP2 AUXILIARY SERVICE BUILDING HVAC SYSTEM

System Description

The NMP2 Auxiliary Service Building HVAC System is designed to provide an environment that ensures habitability of the areas served, consistent with personnel comfort and optimum performance of equipment. The system also supplies filtered and tempered outdoor air for all air conditioned areas.

This system consists of a rooftop air conditioning unit with distribution ductwork, fans, and associated controls. Electric unit heaters are provided to offset building transmission heat losses, thus supplementing the preheat coil in the packaged rooftop air conditioning unit. The unit serves the clean access area and all areas of the auxiliary service building except the carbon dioxide tank room. The exhaust system consists of two fans. One removes ducted exhaust air from the Auxiliary Service Building and discharges into the Turbine Building, which eventually exits to the atmosphere through the main stack via the Turbine Building exhaust fans. The other fan removes ducted exhaust air from the decontamination rooms of the Auxiliary Service Building and discharges it to the atmosphere through the Reactor Building vent.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the fire dampers.

USAR Reference(s)

More information about the Auxiliary Service Building HVAC System can be found in USAR Section 9.4.9.

License Renewal Drawing(s)

Components requiring an AMR for the Auxiliary Service Building HVAC System are highlighted on the following drawings:

- LR-059, Sheet B, Revision 0, Electrical Tunnels and Miscellaneous Vent System
- LR-059, Sheet C, Revision 0, Electrical Tunnels and Miscellaneous Vent System

Components Subject to an AMR

The component types requiring an AMR for the Auxiliary Service Building HVAC System and their intended functions are shown in Table 2.3.3.B.3-1. The AMR results for these component types are provided in Table 3.3.2.B-3.

Table 2.3.3.B.3-1
NMP2 Auxiliary Service Building HVAC System

Component Type	Intended Functions
Fire Dampers	Pressure Boundary

2.3.3.B.4 NMP2 CHILLED WATER VENTILATION SYSTEM (REMOVED)

The NMP2 Chilled Water Ventilation System has been removed from the scope of license renewal since it has been determined that it does not meet any of the criteria of 10 CFR 54.4. The original LRA included this system WSLR under criterion 54.4(a)(2). However, based upon detailed evaluations, this system is not credited for mitigation of any current licensing basis event, does not contain any SR/NSR interfaces, nor introduce any spatial interactions with SR SSCs. Therefore, the Chilled Water Ventilation System is not within the scope of license renewal.

2.3.3.B.5 NMP2 COMPRESSED AIR SYSTEMS

System Description

The NMP2 Compressed Air Systems are designed to provide clean, filtered air to various areas of NMP2. The Compressed Air Systems consist of the Instrument Air System, Service Air System, Breathing Air System, and the Primary Containment Ventilation, Purge, and Nitrogen System. Further information on these systems is provided below.

The Instrument Air System is designed to supply clean, dry, and oil-free air to plant instrumentation and control systems that require an air supply. Three instrument air compressors and three air receivers are arranged in parallel trains with a common discharge header. The Service Air System, Instrument Air System, and Breathing Air Systems are supplied from this header. The flow path for the Instrument Air System is through one of two parallel air prefilters, one of two air dryers, and one of two after filters. The air then goes to an instrument air receiving tank that supplies the Instrument Air System distribution piping network.

The Service Air System is designed to distribute service air to the plant systems that require air as a motive force or for mixing. Service air is supplied from the common compressed air supply header upstream of or downstream from the instrument air refrigerant dryers. The system is normally isolated from the primary containment, but can be supplied to stations inside the primary containment by connecting a hose from the Service Air System to the Service Air piping for the primary containment and opening the manually operated, normally locked closed, containment isolation valves.

The Breathing Air System is designed to provide a reliable supply of clean, filtered air for human breathing. It also supplies clean dry air for use of instruments. Air flows to the air receiver and through drying towers. From the drying towers, the air flows to a line that supplies all breathing stations outside of the Reactor Building and the Reactor Building air receivers. The Reactor Building Breathing Air receiver provides an additional breathing air reserve.

The Primary Containment Ventilation, Purge, and Nitrogen System is used in conjunction with the Standby Gas Treatment System (Section 2.3.2.B.8) to inert and de-inert the primary containment as required. Functions of the primary containment ventilation, purge and nitrogen system include providing a dedicated source of nitrogen gas for the operation of the Automatic Depressurization System (Section 2.3.2.B.1) relief valves, providing a primary source of instrument nitrogen for the operation of gas operated valves in primary containment, providing containment isolation, and providing containment bypass leakage control. The Primary Containment Ventilation, Purge and Nitrogen System consists of a purge fan, two liquid nitrogen storage tanks, two banks of four ambient vaporizers, two trim heaters, four electric vaporizers, six nitrogen gas storage tanks, and an instrument nitrogen receiver.

These systems are in scope for license renewal for the following reasons:

- They perform safety-related functions per 10 CFR 54.4(a)(1).
- They contain NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- They contain SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), anticipated transients without scram (10 CFR 50.62), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR include main steam safety relief valve accumulators, Automatic Depressurization System valve accumulators in the Drywell, Automatic Depressurization System air receivers in the Reactor Building, main steam isolation valve accumulators, radiation collars in the Main Steam Tunnel, and the interconnecting piping, fittings, and valves for these components as well as the supply piping, fittings, and valves in the Missile Protected Area. Components subject to AMR also include the NSR filter, piping, fittings and valves from the SR/NSR interface up to, and including, the first seimic or equivalent anchor.

USAR Reference(s)

More information about the Compressed Air Systems can be found in USAR Section 9.3.1.

License Renewal Drawing(s)

Components requiring an AMR for the Compressed Air Systems are highlighted on the following drawings:

- LR-001, Sheet A, Revision 0, Main Steam
- LR-001, Sheet B, Revision 0, Main Steam
- LR-001, Sheet C, Revision 0, Main Steam
- LR-001, Sheet D, Revision 0, Main Steam
- LR-001, Sheet E, Revision 1, Main Steam
- LR-001, Sheet F, Revision 1, Main Steam
- LR-006, Sheet A, Revision 1, Feedwater System
- LR-011, Sheet C, Revision 1, Service Water System
- LR-011, Sheet E, Revision 1, Service Water System

- LR-011, Sheet F, Revision 1, Service Water System
- LR-011, Sheet P, Revision 1, Service Water System
- LR-011, Sheet Q, Revision 1, Service Water System
- LR-013, Sheet E, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-019, Sheet D, Revision 1, Instrument & Service Air
- LR-019, Sheet E, Revision 0, Instrument & Service Air
- LR-019, Sheet F, Revision 0, Instrument & Service Air
- LR-019, Sheet G, Revision 1, Instrument & Service Air
- LR-019, Sheet J, Revision 0, Instrument & Service Air
- LR-019, Sheet L, Revision 0, Instrument & Service Air
- LR-019, Sheet M, Revision 1, Instrument & Service Air
- LR-020, Sheet E, Breathing Air
- LR-030, Sheet B, Revision 0, Control Rod Drive Hydraulic System
- LR-031, Sheet D, Revision 1, Residual Heat Removal
- LR-031, Sheet E, Revision 1, Residual Heat Removal
- LR-031, Sheet G, Revision 1, Residual Heat Removal
- LR-035, Sheet B, Revision 1, Reactor Core Isolation Cooling
- LR-035, Sheet C, Revision 1, Reactor Core Isolation Cooling
- LR-038, Sheet A, Revision 1, Fuel Pool Cooling & Clean Up
- LR-038, Sheet B, Revision 1, Fuel Pool Cooling & Clean Up
- LR-038, Sheet C, Revision 1, Fuel Pool Cooling & Clean Up

- LR-052, Sheet A, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet G, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet H, Revision 1, Rx Building Ventilation & Cat I Area Coolers
- LR-053, Sheet B, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet C, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet D, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet E, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet F, Revision 0, Control Building Ventilation and Air Conditioning
- LR-057, Sheet A, Revision 0, Diesel Generator Building Ventilation
- LR-058, Sheet A, Revision 0, Screenwell & Diesel Fire Pump Room Vent
- LR-059, Sheet B, Revision 0, Electrical Tunnels and Miscellaneous Vent System
- LR-061, Sheet A, Revision 1, Primary Containment Purge & Standby Gas Treatment
- LR-105, Sheet B, Revision 1, Nitrogen System

Components Subject to an AMR

The component types requiring an AMR for the Compressed Air Systems and their intended functions are shown in Table 2.3.3.B.5-1. The AMR results for these component types are provided in Table 3.3.2.B-5.

Table 2.3.3.B.5-1
NMP2 Compressed Air Systems

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached)

Component Type	Intended Functions
Filter	Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Plateout/Holdup Structural Integrity (Attached)
Orifices	Throttle Pressure Boundary
Radiation Collars	Shielding
Rupture Discs	Pressure Boundary
Tanks and Receivers	Pressure Boundary
Valves	Plateout/Holdup Pressure Boundary Structural Integrity (Attached)

2.3.3.B.6 NMP2 CONTAINMENT ATMOSPHERE MONITORING SYSTEM

System Description

The NMP2 Containment Atmosphere Monitoring System is designed to supply information concerning containment parameters during normal and post accident conditions. Monitored drywell parameters are pressure, air temperature, hydrogen, and oxygen concentration, along with gaseous and particulate radiation levels. Monitored suppression chamber parameters are pressure, air temperature, hydrogen and oxygen concentration, suppression pool level, and temperature. In addition, drywell and suppression chamber humidity are monitored during containment leak rate testing.

The Containment Atmosphere Monitoring System consists of radiation and hydrogen/oxygen monitoring lines. Each line penetrates the primary containment and monitors the radiation level and hydrogen/oxygen concentration during normal operation, so they are equipped with containment isolation valves.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's

regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR include the piping, fittings, and valves from the Primary Containment to the system sample pumps as well as containment monitoring equipment located in the Reactor Building. .Components subject to AMR also include NSR piping, fittings and valves from the SR/NSR interface up to, and including, the first seismic or equivalent anchor.

USAR Reference(s)

More information about the Containment Atmosphere Monitoring System can be found in USAR Sections 6.2.1.7 and 6.2.4.3.2.

License Renewal Drawing(s)

Components requiring an AMR for the Containment AtmosphereMonitoring System are highlighted on the following drawings:

- LR-082, Sheet A, Revision 1, Piping & Instrumentation Diagram Containment Atmosphere Monitoring System (P&ID)
- LR-082, Sheet B, Revision 1, Piping & Instrumentation Diagram Containment Atmosphere Monitoring System (P&ID)

Components Subject to an AMR

The component types requiring an AMR for the Containment Atmosphere Monitoring System and their intended functions are shown in Table 2.3.3.B.6-1. The AMR results for these component types are provided in Table 3.3.2.B-6.

Table 2.3.3.B.6-1
NMP2 Containment Atmosphere Monitoring System

Component Type	Intended Functions
Bolting	Pressure Boundary
Condensing Chambers	Pressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Pumps	Pressure Boundary
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3.B.7 NMP2 CONTAINMENT LEAKAGE MONITORING SYSTEM

System Description

The NMP2 Containment Leakage Monitoring System is designed to provide a means of monitoring the drywell area pressure and the suppression chamber pressure during periodic leak rate testing. Two independent pressure sensing lines penetrate the primary containment and connect to instrumentation outside the drywell during testing. The system also continuously monitors the drywell electrical penetrations to detect leakage past the sealing mechanism.

The system consists of cables, switches, transmitters, indicators, relays, fuses, power supplies, containment isolation devices, and various raceways, tubing/lines, hangers, and penetrations.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include solenoid valves inside the drywell and suppression chamber, solenoid valves outside the drywell and suppression chamber, and the associated piping between them. Components subject to AMR also include the NSR piping, fittings and valves up to, and including, the first seismic or equivalent anchor.

USAR Reference(s)

More information about the Containment Leakage Monitoring System can be found in USAR Section 6.2.6.

License Renewal Drawing(s)

Components requiring an AMR for the Containment Leakage Monitoring System are highlighted on the following drawing:

- LR-081, Sheet A, Revision 1, Piping & Instrumentation Diagram Containment Leakage Monitoring System (P&ID)

Components Subject to an AMR

The component types requiring an AMR for the Containment Leakage Monitoring System and their intended functions are shown in Table 2.3.3.B.7-1. The AMR results for these component types are provided in Table 3.3.2.B-7.

Table 2.3.3.B.7-1
NMP2 Containment Leakage Monitoring System

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3.B.8 NMP2 CONTROL BUILDING CHILLED WATER SYSTEM

System Description

The NMP2 Control Building Chilled Water System is designed to provide chilled water to the air conditioning units that provide cooling for personnel and equipment in the control room, relay room, remote shutdown room, and computer room. This system is designed to perform during normal operation, plant shutdown, or accident conditions without loss of function.

The Control Building Chilled Water System is a closed loop piping system consisting of two independent, redundant chilled water loops. Each loop consists of a chilled water pump, a chiller compressor, an expansion tank, and the cooling coils of the air conditioning units. The chilled water pumps take suction at the expansion tank and circulate the water through the control building chilled water chillers, cooling coils, and then back to the pump. Thermostatically controlled valves regulate the bypass flow around the cooling coils to maintain the set temperature. The heat gained by the chilled water at each air conditioning unit is rejected to service water supplied to each chiller by safety related portions of the Service Water System (Section 2.3.3.B.27).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include the chilled water circulating pumps, the passive subcomponents within the chillers, the chilled water expansion tanks, and the interconnecting piping and valves up to the ventilation units in the Control Building and the Remote Shutdown Room. The subcomponents within those ventilating units are included within the scope of the Control Building HVAC System (Section 2.3.3.B.9). The components subject to an AMR for this system also include the NSR piping, fittings, and valves in the Control Room Building.

USAR Reference(s)

More information about the Control Building Chilled Water System can be found in USAR Sections 7.3.1.1.11 and 9.4.10.1.

License Renewal Drawing(s)

Components requiring an AMR for the Control Building Chilled Water System are highlighted on the following drawings:

- LR-011, Sheet J, Revision 1, Service Water System
- LR-053, Sheet A, Revision 1, Control Building Chilled Water

Components Subject to an AMR

The component types requiring an AMR for the Control Building Chilled Water System and their intended functions are shown in Table 2.3.3.B.8-1. The AMR results for these component types are provided in Table 3.3.2.B-8.

Table 2.3.3.B.8-1
NMP2 Control Building Chilled Water System

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached) Leakage Boundary (Spatial)
Chillers	Heat Transfer Pressure Boundary
Flow Elements	Pressure Boundary

Component Type	Intended Functions
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Tanks	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.9 NMP2 CONTROL BUILDING HVAC SYSTEM

System Description

The NMP2 Control Building HVAC System provides filtration, pressurization, heating and cooling to the control building envelope during normal and emergency operations by operating in normal, smoke purge and emergency modes.

Outdoor air is supplied to the control building through missile and tornado protected air intakes. From the intakes, the air is drawn into large duct chases by the four air conditioning units. The air is heated or cooled by cooling coils in the air conditioning units or by heaters in the ductwork and force circulated by the air conditioning unit fans throughout the control building envelope. Natural exhaust ventilation is provided through return registers back to the duct chases where most of the air is then recirculated.

In the emergency mode, the system will divert the intake air through special filters under certain conditions. The filter trains are normally bypassed and automatically come on line on either a supply air radiation monitor trip system signal or a LOCA signal. They would then provide filtered air to the Control, Relay, and Computer Rooms. The system is equipped with a special smoke removal system for use post fire. It removes smoke and heat from the control building using special supply and exhaust fans, dampers, and controls.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function(s) per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The components subject to an AMR include control building air conditioning units, each with its own fan and filter train, tornado dampers, fire dampers, and the associated system ducting and dampers. Additionally, equipment used for smoke removal (i.e., air handling unit, smoke removal fans, and associated ducting and dampers) is also subject to an AMR.

USAR Reference(s)

More information about the Control Building HVAC System can be found in USAR Section 9.4.1.

License Renewal Drawing(s)

Components requiring an AMR for the Control Building HVAC System are highlighted on the following drawings:

- LR-053, Sheet A, Revision 1, Control Building Chilled Water
- LR-053, Sheet B, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet C, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet D, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet E, Revision 0, Control Building Ventilation and Air Conditioning
- LR-053, Sheet F, Revision 0, Control Building Ventilation and Air Conditioning
- LR-054, Sheet A, Revision 0, Chilled Water and Normal Switchgear Building Ventilation
- LR-059, Sheet B, Revision 0, Electrical Tunnels and Miscellaneous Vent System

Components Subject to an AMR

The component types requiring an AMR for the Control Building HVAC System and their intended functions are shown in Table 2.3.3.B.9-1. The AMR results for these component types are provided in Table 3.3.2.B-9.

Table 2.3.3.B.9-1
NMP2 Control Building HVAC System

Component Type	Intended Functions
Air Handling Unit	Pressure Boundary
Blowers	Pressure Boundary
Bolting	Pressure Boundary
Ducting	Pressure Boundary
Filters/Strainers	Filter Pressure Boundary
Flow Elements	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary
Radiation Sample Point	Pressure Boundary
Valves and Dampers (includes fire dampers)	Pressure Boundary

2.3.3.B.10 NMP2 DIESEL GENERATOR BUILDING VENTILATION SYSTEM

System Description

The NMP2 Diesel Generator Building Ventilation System is designed to provide heating and outside air ventilation to the diesel rooms and diesel generator control rooms. Each Diesel Generator room is equipped with its own ventilation system. Additionally, the Diesel Generator Building Ventilation HVAC System is designed with unit coolers to maintain habitable conditions for personnel comfort within the diesel generator control rooms.

The Diesel Generator Building Ventilation system performs the following functions: normal heating, normal ventilation, control room cooling, and general area emergency ventilation. The normal duty heating function maintains the Diesel Generator rooms above 65°F during the winter. The normal ventilation function maintains the Diesel Generator rooms adequately ventilated and exhausts room air to the atmosphere. The control room cooling function maintains the Diesel Generator rooms below the maximum design temperature. Cooling water for the unit coolers is provided from the Service Water System (Section 2.3.3.B.27). The general area emergency ventilation function establishes a ventilating flow of outside air through the Diesel Generator rooms to ensure that the space temperatures remain below

125°F outside the control room or 104°F inside the control room for efficient equipment operation.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include the diesel generator room ventilation blowers, diesel generator room motor-operated dampers, diesel generator control room unit coolers and associated ductwork, tornado dampers, inlet dampers, and associated ductwork.

USAR Reference(s)

More information about the Diesel Generator Building Ventilation System can be found in USAR Section 9.4.6.

License Renewal Drawing(s)

Components requiring an AMR for the Diesel Generator Building Ventilation System are highlighted on the following drawings:

- LR-011, Sheet L, Revision 1, Service Water System
- LR-057, Sheet A, Revision 0, Diesel Generator Building Ventilation

Components Subject to an AMR

The component types requiring an AMR for the Diesel Generator Building Ventilation System and their intended functions are shown in Table 2.3.3.B.10-1. The AMR results for these component types are provided in Table 3.3.2.B-10.

Table 2.3.3.B.10-1
NMP2 Diesel Generator Building Ventilation System

Component Type	Intended Functions
Blowers	Pressure Boundary

Component Type	Intended Functions
Dampers (includes fire dampers)	Pressure Boundary
Ducting	Pressure Boundary
Unit Coolers	Pressure Boundary

2.3.3.B.11 NMP2 DOMESTIC WATER SYSTEM

System Description

The NMP2 Domestic Water System is designed to provide sufficient domestic water from an existing city main to various areas of the plant including the Makeup Water Treatment System (Section 2.3.3.B.35)and the Fire Protection System (Section 2.3.3.B.13). Additionally the Domestic Water System ensures minimization of flooding potential by providing isolation capabilities of the Control Building from domestic water supply, should piping within the building rupture during a seismic event. Domestic water is supplied to various buildings throughout the plant including the Control Building, Turbine Building, and the Auxiliary Building. The Domestic Water System also provides makeup water to various systems including the Fire Protection System and the Filtered Water Tank.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR include one isolation valve inside the Control Building,and NSR piping, fittings, tank and valves in the vicinity of SR SSCs in the Auxiliary Boiler Building, Auxiliary Service Building, Control Building, Screenwell Building and Service Water Tunnel.

USAR Reference(s)

More information about the Domestic Water System can be found in USAR Sections 1.2.10.10 and 9.2.4.

License Renewal Drawing(s)

Components requiring an AMR for the Domestic Water System are highlighted on the following drawing:

- LR-050, Sheet A, Revision 1, Domestic Water (P&ID)
- LR-050, Sheet B, Revision 0, Domestic Water (P&ID)

Components Subject to an AMR

The component types requiring an AMR for the Domestic Water System and their intended functions are shown in Table 2.3.3.B.11-1. The AMR results for these component types are provided in Table 3.3.2.B-11.

Table 2.3.3.B.11-1
NMP2 Domestic Water System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial)

2.3.3.B.12 NMP2 ENGINE-DRIVEN FIRE PUMP FUEL OIL SYSTEM

The NMP2 Engine-Driven Fire Pump Fuel Oil System is designed to supply fuel oil to the diesel engine-driven fire pump. The electric-driven fire pump and diesel engine-driven fire pump are located in separate rooms within the Screenwell Building. The fuel oil storage tank for the diesel fire pump is located in the diesel fire pump room above a sump. Fuel is gravity fed to the engine and excess fuel supplied to the engine by its fuel pump is recirculated to the tank.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the fuel oil storage tank, all associated suction and discharge piping and valves between the fuel oil storage tank and the fire pump diesel engine, all associated piping between the fuel oil storage tank and the Screenwell Building atmospheric vent, and all associated piping and valves from the Screenwell Building fill connection to the fuel oil storage tank.

USAR Reference(s)

More information about the Engine-Driven Fire Pump Fuel Oil System can be found in USAR Sections 9.5.1.2.2 and 9A.3.1.2.5.6.

License Renewal Drawing(s)

Components requiring an AMR for the Engine-Driven Fire Pump Fuel Oil System are highlighted on the following drawing:

- LR-043, Sheet A, Revision 0, Fire Protection - Water

Components Subject to an AMR

The component types requiring an AMR for the Engine-Driven Fire Pump Fuel Oil System and their intended functions are shown in Table 2.3.3.B.12-1. The AMR results for these component types are provided in Table 3.3.2.B-12.

Table 2.3.3.B.12-1
NMP2 Engine-Driven Fire Pump Fuel Oil System

Component Type	Intended Functions
Bolting	Pressure Boundary
Piping and Fittings	Pressure Boundary
Tank	Pressure Boundary
Valves	Pressure Boundary

2.3.3.B.13 NMP2 FIRE DETECTION AND PROTECTION SYSTEM

System Description

The NMP2 Fire Detection and Protection System is designed for detecting, alarming, isolating and suppressing fires in the plant. It contains SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the commission's regulations. The fire protection system consists, in part, of a reliable freshwater supply, one electric motor-driven fire pump and one diesel engine-driven fire pump, two pressure maintenance fire pumps, one pressure maintenance pump supply tank, one hydropneumatic tank, fire water yard mains, hydrants, standpipes, hose stations, sprinkler, water spray, preaction and deluge systems, foam-water deluge systems, low-pressure carbon dioxide systems, Halon 1301 systems, and a detection and signaling system. These components in the

Fire Detection and Protection System are further divided into the Fire Protection Foam System, the Fire Protection Halon System, the Cardox Fire Protection System, the Fire Detection System, and the Fire Protection Water System. The collective capability of the fire suppression systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility fire protection program. Further information on these systems is provided below.

The Fire Protection Foam System provides fire suppression through blanketing affected areas with dense foam provided by mixing of fire system water, foam concentrate, and air. The system is manually initiated and is split into two foam supply systems, fixed and hose reel. Each supply system consists of a foam concentrate storage tank and pumps. Either tank can be lined up to supply the other system if needed.

The Fire Protection Halon System is designed to suppress cable fires in the floor sections of the computer room, relay room, control room, and the radwaste control room. This system is actuated either automatically by fire detectors or manually from the main control room or at local fire panels. The Fire Protection Halon System fire detectors provide common alarms, zone alarms into their respective local panels, and individual alarms into the Fire Protection Computer.

The Cardox Fire Protection System is designed to supply carbon dioxide to fixed and hose reel stations for the purpose of extinguishing fires. The system consists of two 13-ton storage tanks, a refrigeration unit, valves, and piping that conveys carbon dioxide to fixed nozzles at individual hazards. Total-flooding carbon dioxide systems are: 1) switchgear rooms, 2) standby and HPCS switchgear rooms, 3) 600V switchgear room, 4) radwaste switchgear room, 5) lube oil reservoir in the turbine building, and 6) alternator-exciter enclosure in the Turbine Building. These stations are provided with automatic initiation capabilities. Manually-actuated local application systems are provided to protect turbine generator bearings and oil piping and carbon dioxide hose stations are provided in the Turbine, Control, Reactor, Normal Switchgear, and Diesel Generator Buildings. Operation of each carbon dioxide system is signaled locally and in the main control room. The system also supplies carbon dioxide to the main generator for the purpose of hydrogen purging, and air purging.

The Fire Detection System is designed to provide early detection, annunciation, and actuation of suppression systems in the event of a fire. The thermal and smoke detection systems function to detect products of combustion, alarming both locally and in the main control room. Where suppression is automatic, the detection system functions to actuate associated suppression systems. The Fire Detection System gives audible and visual annunciation in the control room and local audible alarms.

The Fire Protection Water System is designed to provide a reliable, readily available source of water for controlling and extinguishing fires. Additionally the Fire Protection Water System provides control room indication and may be used as an alternative injection/spray source into the RPV or primary containment by cross-connecting Fire Protection Water to the Residual Heat Removal System (Section 2.3.2.B.7). The Fire Protection Water System is composed of hose stations, hydrants, deluge, and water spray systems, fire pumps, sprinkler systems and pressure maintenance pumps. The water source for the fire protection system is Lake Ontario, which is considered to be unlimited. The water supply to the fire pumps is sufficient to meet the largest expected fire demand, and either one of the two supplied fire pumps is capable of providing this expected largest demand flow. One electric motor-driven and one diesel engine-driven fire pump are provided. The yard fire protection loop for NMP2 is interconnected with the NMP1 fire loop.

The Fire Detection and Protection system is in scope for license renewal for the following reasons:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR for the above described Fire Detection and Protection subsystems include the following:

- The Fire Protection Foam subsystem components subject to AMR consist of the two foam concentrate tanks, the four foam concentrate pumps, the ratio flow proportioner, and the associated piping, fittings, and valves connecting these components and that make up the foam distribution system.
- The Fire Protection Halon subsystem components subject to AMR consist of halon storage tanks and their associated halon distribution system piping and fittings, valves, rupture discs, flow orifices, flex hoses, and discharge nozzles.

- The Cardox Fire Protection subsystem components subject to AMR consist of the carbon dioxide storage tanks and their associated distribution system piping and fittings, valves, hoses, and nozzles.

- The Fire Detection subsystem contains only active components and, therefore, has no components subject to AMR.

- The Fire Protection Water subsystem components subject to AMR consist of the motor-driven and diesel engine-driven fire pumps, the cooling water system for the engine-driven pump including its heat exchangers, the engine-driven pump exhaust system including the piping and muffler, and the associated fire protection water distribution system piping and fittings, valves, flow orifices, strainers and sprinklers.

The components subject to an AMR for this system also include the NSR piping, fittings, and equipment containing liquid in the vicinity of SR SSCs in the Control Building, Auxiliary Services Building, Decontamination Area (located south of the Radwaste Building), Diesel Generator Building, , Reactor Building (secondary containment), Screenwell Building, Standby Gas Treatment Building, and Turbine Building.

USAR Reference(s)

More information about the Fire Detection and Protection System can be found in USAR Sections 9.5.1, 9A.3.1.2.5.4, and 9A.3.6.

License Renewal Drawing(s)

Components requiring an AMR for the Fire Detection and Protection System are highlighted on the following drawings:

- LR-043, Sheet A, Revision 0, Fire Protection – Water

- LR-043, Sheet B, Revision 0, Fire Protection – Water

- LR-043, Sheet C, Revision 0, Fire Protection – Water

- LR-043, Sheet D, Revision 0, Fire Protection – Water

- LR-043, Sheet E, Revision 0, Fire Protection – Water

- LR-043, Sheet F, Revision 0, Fire Protection – Water

- LR-043, Sheet G, Revision 1, Fire Protection – Water

- LR-043, Sheet H, Revision 0, Fire Protection – Water
- LR-044, Sheet A, Revision 0, Fire Protection – Foam
- LR-044, Sheet B, Revision 0, Fire Protection - Foam
- LR-045, Sheet A, Revision 0, Fire Protection, CO_2 System
- LR-045, Sheet B, Revision 0, Fire Protection, Low Pressure, CO_2
- LR-045, Sheet C, Revision 0, Fire Protection, CO_2 System
- LR-046, Sheet A, Revision 0, Fire Protection – Halon

Components Subject to an AMR

The component types requiring an AMR for the Fire Detection and Protection System and their intended functions are shown in Table 2.3.3.B.13-1. The AMR results for these component types are provided in Table 3.3.2.B-13. (Note: The in-scope components for the Fire Detection System are active components. Therefore, there are no components requiring an AMR for the Fire Detection System.)

Table 2.3.3.B.13-1
NMP2 Fire Detection and Protection System

Component Type	Intended Functions
Bolting	Pressure Boundary
Fire Hydrants	Pressure Boundary
Flow Elements	Leakage Boundary (Spatial) Pressure Boundary
Halon Tank Flex Hoses	Pressure Boundary
Heat Exchangers	Leakage Boundary (Spatial) Pressure Boundary
Hose Reels	Pressure Boundary
Manifold	Leakage Boundary (Spatial) Pressure Boundary
Nozzles	Pressure Boundary Spray
Odorizers	Pressure Boundary
Orifices	Leakage Boundary (Spatial) Pressure Boundary

Component Type	Intended Functions
Piping and Fittings	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial) Pressure Boundary
Ratio Flow Proportioner	Leakage Boundary (Spatial) Pressure Boundary
Rupture Discs	Leakage Boundary (Spatial) Pressure Boundary Pressure Relief
Silencer	Pressure Boundary
Strainers	Leakage Boundary (Spatial) Pressure Boundary
Tanks	Leakage Boundary (Spatial) Pressure Boundary
Temperature Indicators	Leakage Boundary (Spatial) Pressure Boundary
Valves	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)

2.3.3.B.14 NMP2 FLOOR AND EQUIPMENT DRAINS SYSTEM

System Description

The Floor and Equipment Drains System consists of the Drywell and Reactor Building Equipment Drains/Floor Drains, the Standby Diesel Generator Building Floor and Equipment Drains, the Miscellaneous Floor and Equipment Drains, the Radwaste Building Floor and Equipment Drains, the Auxiliary Service Building Floor and Equipment Drains, the Turbine Building Equipmentand Floor Drains, and the Turbine Plant Miscellaneous Drains subsystems. The Floor and Equipment Drains System collects, holds, monitors, and discharges drainage from floor and equipment drain sub-systems from various buildings/areas and provides for the proper handling and disposal of radioactive and non-radioactive effluents.

Floor and equipment drain systems are designed to prevent contamination of the storm drain system with effluent from sumps containing radioactive or potentially radioactive drainage. The effluent from all sumps/tanks in a given building is discharged to one of the following disposal points:

- Radwaste System for radioactive or potentially radioactive drains.
- Storm Drain System or discharge tunnel for nonradioactive drains.

The Floor and Equipment Drain Systems serving buildings that house SR equipment have sufficient capacity to prevent excessive drain buildup that could affect the operability of the equipment. The discharge piping from each sump pump contains a check valve to prevent backflow from one pump to another.

Each equipment and floor drain sump receiving radioactive influent is lined with either stainless steel or fiberglass to prevent migration of its contents. Sumps receiving nonradioactive influent are of concrete and are not lined. Each sump is sized to contain the influent from the equipment or area it serves.

Flow from Floor and Equipment Drains that has no potential for radioactive contamination is discharged to the Storm Drainage System. Prior to discharge into the Storm Drainage System, all potentially oily drainage (except for the diesel fire pump room) is routed through an oil separator.

The Floor and Equipment Drains System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

- The entire mechanical portion of the Reactor Building and Drywell Floor and Equipment Drains is subject to an AMR including the Reactor Building mat drainage sumps. Control Building Floor and Equipment drains, including the Control Building sump, are subject to an AMR in its entirety. The entire mechanical portion of Turbine Miscellaneous Drains is also subject to an AMR from its high energy sources to the Main Condenser. Other floor and drain system components subject to an AMR include the sumps, pumps, discharge piping and fittings, and valves in the Service Water bays, the Main Stack structure, the Auxiliary Service Building, the Radwaste Building, the Diesel Generator Building, and Turbine Building Floor and Equipment Drains including Pipe Tunnels and Condenser Pit Sumps.

USAR Reference(s)

More information about the Floor and Equipment Drains System can be found in USAR Section 9.3.3.

License Renewal Drawing(s)

Components requiring an AMR for the Floor and Equipment Drains System are highlighted on the following drawings:

- LR-037, Sheet A, Revision 1, Reactor Water Cleanup System
- LR-063, Sheet A, Revision 1, Reactor Building Equipment and Floor Drains
- LR-063, Sheet B, Revision 0, Reactor Building Equipment and Floor Drains
- LR-063, Sheet C, Revision 1, Reactor Building Equipment and Floor Drains
- LR-063, Sheet D, Revision 1, Reactor Building Equipment and Floor Drains
- LR-063, Sheet E, Revision 1, Reactor Building Equipment and Floor Drains
- LR-064, Sheet G, Revision 0, Turbine Bldg Floor Drains
- LR-064, Sheet J, Revision 0, Turbine Bldg Floor Drains
- LR-066, Sheet B, Revision 1, Miscellaneous Drains
- LR-066, Sheet C, Revision 0, Misc Bldgs-Floor & Equipment Drains
- LR-066, Sheet D, Revision 0, Misc Bldgs-Floor & Equipment Drains
- LR-066, Sheet F, Revision 0, Misc Bldgs-Floor & Equipment Drains
- LR-066, Sheet G, Revision 0, Misc Bldgs-Floor & Equipment Drains
- LR-066, Sheet H, Revision 0, Misc Bldgs-Floor & Equipment Drains
- LR-066, Sheet J, Revision 0, Turbine Plant Misc Drains

- LR-066, Sheet K, Revision 0, Turbine Plant Misc Drains
- LR-066, Sheet L, Revision 0, Turbine Plant Misc Drains
- LR-067, Sheet A, Revision 1, Drywell Equipment Drains

Components Subject to an AMR

The component types requiring an AMR for the Floor and Equipment Drains System and their intended functions are shown in Table 2.3.3.B.14-1. The AMR results for these component types are provided in Table 3.3.2.B-14.

Table 2.3.3.B.14-1
NMP2 Floor and Equipment Drains System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Drain Tank	Pressure Boundary Structural Integrity (Attached)
Floor Drains	Pressure Boundary
Flow Elements	Pressure Boundary
Piping and Fittings	Leakage Boundary (Spatial) Plateout/Holdup Structural Integrity (Attached) Pressure Boundary
Pumps	Pressure Boundary Leakage Boundary (Spatial)
Orifices	Throttle Pressure Boundary
Spray Nozzle	Pressure Boundary Spray
Strainers	Pressure Boundary
Valves	Leakage Boundary (Spatial) Plateout/Holdup Structural Integrity (Attached) Pressure Boundary

2.3.3.B.15 NMP2 GENERATOR STANDBY LUBE OIL SYSTEM

System Description

The NMP2 Generator Standby Lube Oil System is designed to lubricate the engine bearings, turbocharger, and other moving parts of the emergency diesel generators. Additionally, this system preheats the oil, prelubricates the engine, warms the jacket water, cools the pistons, and keeps the inside of the engine clean by preventing rust and corrosion. System components include lube oil pumps, coolers, heaters, strainers, filters, pressure regulators, control valves, and piping. The Generator Standby Lube Oil System also features a Generator Standby Temperature System that preheats the lubricating oil and jacket water to enhance long-term engine reliability and first-try starting of the diesel engine.

The Division I/II and Division III systems differ slightly, and the positions of the cooler and the filter/strainer are reversed, but the basic flow paths are similar. Depending upon the status of the engine, either the circulating pump or the main oil pump takes oil from the engine sump and circulates it through a cooler, filter/strainer, and then directs it to the engine. Then, the oil flows to the main bearings, the connecting rod bearings, the connecting rods and pins, and to the pistons. From the pistons, oil drains back to the sump. When the engine starts, the circulating oil pump stops and the main engine-driven oil pump takes over. A thermostatic valve controls the oil temperature to the engine by regulating the flow to the oil cooler. Both systems also have special filtering and oil supply provisions for their respective turbochargers.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the following:

- For Division I & II: motor driven lube oil circulating pumps, heaters and associated check valves, suction side gate valves, and discharge side relief valves and gate valves; engine driven main lube oil pumps, suction side check valves, and discharge side relief valves; lube oil coolers and the three-way thermostatic valves located ahead of the coolers, and drain valves; valves associated with the lube oil filters and the gate valves in the lube oil filter bypass lines; lube oil strainers and plug valves (one on each side of a strainer); turbocharger oil filters and associated valves and a relief valve upstream of the turbocharger oil filters.
- For Division III: scavenging pump and strainer drain valve; main lube oil pump; piston cooling oil pump; lube oil circulating pumps, discharge side check valves, and discharge side relief valve; turbocharger lube oil pumps, discharge side swing check valves, and discharge side relief valve; lube oil cooler discharge side swing check valve; and jacket water heater.

USAR Reference(s)

More information about the Generator Standby Lube Oil System can be found in USAR Section 9.5.7.

License Renewal Drawing(s)

Components requiring an AMR for the Generator Standby Lube Oil System are highlighted on the following drawings:

- LR-104, Sheet D, Revision 0, Jacket Water Standby Diesel Generator System
- LR-104, Sheet E, Revision 0, Lube Oil Standby Diesel Generator System

Components Subject to an AMR

The component types requiring an AMR for the Generator Standby Lube Oil System and their intended functions are shown in Table 2.3.3.B.15-1. The AMR results for these component types are provided in Table 3.3.2.B-15.

Table 2.3.3.B.15-1
NMP2 Generator Standby Lube Oil System

Component Type	Intended Functions
Bolting	Pressure Boundary
Filters/Strainers	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary
Pumps	Pressure Boundary
Orifices	Pressure Boundary
Sight Glasses	Pressure Boundary
Valves	Pressure Boundary

2.3.3.B.16 NMP2 GLYCOL HEATING SYSTEM (REMOVED)

The NMP2 Glycol Heating System has been removed from the scope of license renewal since it has been determined that it does not meet any of the criteria of 10 CFR 54.4. The original LRA included this system WSLR under criterion 54.4(a)(2). However, based upon detailed evaluations, this system is not credited for mitigation of any current licensing basis event, does not contain any SR/NSR interfaces, nor introduce any spatial interactions with SR SSCs. Therefore, the Glycol Heating System is not within the scope of license renewal.

2.3.3.B.17 NMP2 HOT WATER HEATING SYSTEM

System Description

The NMP2 Hot Water Heating System functions with the Glycol Heating System (Section 2.3.3.B.16) to heat outdoor makeup air used for ventilation. Hot water is generated from steam and is circulated through glycol heat exchangers. The Hot Water Heating System is equipped with piping connections to allow this system to be connected to a temporary hot water heating plant. This is only used if the Hot Water Heating System is not available and glycol heating in the Reactor Building is needed. The Hot Water Heating System consists of hot water recirculation pumps, heat exchangers, an expansion tank, nitrogen bottles, makeup water pumps, an air separator, piping, valves, instrumentation, and controls.

The system is closed loop. Depending upon the operating mode, electric boiler, auxiliary steam, or extraction steam is supplied to the shell side of both the building heating auxiliary heat exchangers and the intermediate heat exchangers. The intermediate heat exchangers drain to the main steam condenser and the auxiliary heat exchangers drain to the auxiliary boiler deaerator. The hot water recirculating pump takes suction at the expansion tank and then circulates water through the building heating intermediate heat exchangers or the building heating auxiliary heat exchangers. The heated water subsequently passes through one of three sets of water-to-glycol heat exchangers: reactor building glycol heat exchangers, turbine building glycol heat exchangers, or radwaste building glycol heat exchangers. The water then returns to the pump suction.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the Hot Water Heating System NSR piping, fittings, and valvesin the Reactor Building that are in the vicinity of the Liquid Poison Tanks. The remaining portions of this system are not credited for the mitigation of current licensing basis events, do not contain any SR/NSR interfaces nor in the vicinity of SR SSCs. Therefore, those portions are not WSLR.

USAR Reference(s)

More information about the Hot Water Heating System can be found in USAR Section 9.4.12. License Renewal Drawing(s)

Components requiring an AMR for the Hot Water Heating System are highlighted on the following drawing:

- LR-049, Sheet C, Revision 0, Hot Water Heating

Components Subject to an AMR

The component types requiring an AMR for the Hot Water Heating System and their intended functions are shown in Table 2.3.3.B.17-1. The AMR results for these component types are provided in Table 3.3.2.B-17.

Table 2.3.3.B.17-1
NMP2 Hot Water Heating System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.B.18 NMP2 MAKEUP WATER SYSTEM

System Description

The NMP2 Makeup Water System is designed to provide demineralized Makeup Water for the Turbine Building Closed Loop Cooling Water System(Section 2.3.3.B.40), and the Reactor Building Closed Loop Cooling Water System (Section 2.3.3.B.23). The system consists of the Makeup Water Treatment System and the Makeup Water Storage and Transfer System. Additionally, the Makeup Water System meets plant requirements for demineralized water, including the suppression pool and the spent fuel pool.

The Makeup Water System produces demineralized water by removing dissolved and suspended solids from city water using a portable demineralizer. The Makeup Water System also stores and distributes demineralized water from the Makeup Water Treatment System (Section 2.3.3.B.35).This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the Makeup Water System NSR piping, fittings, and valves supplying water to the Control Building Chilled Water System.In the Reactor Building (secondary containment), the NSR piping and fittings subject to an AMR include the lines supplying the Spent Fuel Pool, Reactor Internals Storage Pit, Reactor Cavity Pit, Reactor Closed Loop Cooling, and Control Rod Drive Hose Station/Maintenance Area. The Screenwell Building and Turbine Building NSR piping and fittings subject to an AMR are the supply line to the Reactor Building and Control Building. The remaining portions of this system are not credited for the mitigation of current licensing basis events, do not contain any SR/NSR interfaces nor in the vicinity of SR SSCs. Therefore, those portions are not WSLR. USAR Reference(s)

More information about the Makeup Water System can be found in USAR Section 1.2.10.9.

License Renewal Drawing(s)

Components requiring an AMR for the Makeup Water System are highlighted on the following drawing:

- LR-013, Sheet A, Revision 1, Reactor Bldg Closed Loop Cooling Water
- LR-016, Sheet A, Revision 0, Makeup Water
- LR-048, Sheet A, Revision 0, Auxiliary Boiler Feedwater & Condensate

Components Subject to an AMR

The component types requiring an AMR for the Makeup Water System and their intended functions are shown in Table 2.3.3.B.18-1. The AMR results for these component types are provided in Table 3.3.2.B-18.

Table 2.3.3.B.18-1
NMP2 Makeup Water System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached)
Valves	Leakage Boundary (Spatial)

2.3.3.B.19 NMP2 NEUTRON MONITORING SYSTEM

System Description

The Neutron Monitoring System is designed to provide neutron flux level monitoring of the reactor in three separate ranges, Source Range Monitoring, Intermediate Range Monitoring, and Power Range Monitoring. It is used to monitor and aid the operator in controlling the reactor from startup through full power, inputs to the Reactor Manual Control System (not within scope of license renewal) to initiate rod blocks if preset flux limits are exceeded, and it inputs signals to the Reactor Protection System (Section 2.5.B.18) to initiate a scram if limits are exceeded. The Neutron Monitoring System has five subsystems. The Source Range Monitoring subsystem measures the flux from startup through criticality. The Intermediate Range Monitoring subsystem overlaps the Source Range Monitoring subsystem and extends well into the power range. The power range is monitored by detectors that make up the Local Power Range Monitor subsystem. The Average Power Range Monitor subsystem is composed of core-wide sets of Local Power Range Monitor detectors that are averaged to provide a core average neutron flux. The Traversing In-core Probe subsystem provides a means for calibrating the Local Power Range Monitor subsystem.

The Source Range Monitoring and Intermediate Range Monitoring subsystems are equipped with mechanically retractable detector assemblies which allow the operator to insert the detectors into the reactor core whenever the channels are needed, and then retract the detectors to a low neutron flux region to prevent unnecessary burnup. The Local Power Range Monitoring detectors are installed at fixed locations in the reactor core. The Average Power Range Monitoring subsystem uses the signals from the Local Power Range Monitoring detectors to provide average power range signals for monitoring.

The Neutron Monitoring System also includes the Traversing In-core Probe System. It consists of five identical trains, each consisting of a neutron detector probe, drive mechanism, indexing mechanism, valve assembly, shield chamber, and control and readout equipment. The drive mechanism inserts and withdraws the Traversing In-core Probe and the cable from the reactor and provides detector position indication signals to the Traversing In-core Probe Control and Monitoring Panel. The indexing mechanism is used to align the probe with the core location to be traversed. Ball and shear valves function as reactor coolant isolation valves if a leak were to occur in a calibration or guide tube. The shield chamber provides a storage place for the Traversing In-core Probe detector. The Traversing In-core Probe System has a purge system which prevents rusting of the detector and caking of the guide tube lubricant.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The components subject to an AMR include the Traversing In-core Probe automatic and remote manual isolation valves, expansion joint assemblies, and the guide tube drywell penetrations. The dry tubes for Source Range Monitoring and Intermediate Range Monitoring detectors are not included in the system boundary. The dry tubes are included with the RPV Internals (Section 2.3.1.B.2).

USAR Reference(s)

More information about the Neutron Monitoring System can be found in USAR Section 7.7.1.7.

License Renewal Drawing

Components requiring an AMR for the Neutron Monitoring System are highlighted on the following drawing:

- LR-12177-EM-38A, Revision 0, Arrangement Neutron Monitoring System - Reactor Building

Components Subject to an AMR

The component types requiring an AMR for the Neutron Monitoring System and their intended functions are shown in Table 2.3.3.B.19-1. The AMR results for these component types are provided in Table 3.3.2.B-19.

Table 2.3.3.B.19-1
NMP2 Neutron Monitoring System

Component Type	Intended Functions
Bellows	Pressure Boundary
Bolting	Pressure Boundary
Piping and Fittings	Pressure Boundary

Component Type	Intended Functions
Valves	Pressure Boundary

2.3.3.B.20 NMP2 PRIMARY CONTAINMENT PURGE SYSTEM

System Description

The NMP2 Primary Containment Purge System is designed to inert the primary containment with nitrogen, and to limit oxygen and hydrogen concentrations in the primary containment and ensure a combustible atmosphere does not occur following a LOCA. The Primary Containment Purge System is also designed to de-inert and ventilate the primary containment during plant shutdown for the purpose of drywell entry. The Primary Containment Purge System operates as a subsystem of the Reactor Building HVAC System (Section 2.3.3.B.24).

The purge subsystem consists of one centrifugal fan, piping, valves, controls, and accessories. Piping penetrations through the primary containment are each protected with redundant safety-related normally closed, fail closed isolation valves which close on a LOCA. Inerting the primary containment is accomplished by feed and bleed. To inert, nitrogen gas from the Nitrogen System [see the Compressed Air Systems (Section 2.3.3.B.5)] is fed into the drywell or suppression chamber. Air is exhausted into and processed by the Standby Gas Treatment System (Section 2.3.2.B.8) before it is discharged through the main stack.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49).

The components subject to an AMR include the SR valves and inclusive piping associated with each of the system's primary containment piping penetrations. Also subject to AMR are the NSR flow elements, piping, fittings, and valves from the SR/NSR interface up to, and including, the first seismic or equivalent anchor.

USAR Reference(s)

More information about the Primary Containment Purge System can be found in USAR Section 9.4.2.2.2.

License Renewal Drawing(s)

Components requiring an AMR for the Primary Containment Purge System are highlighted on the following drawing:

- LR-061, Sheet A, Revision 1, Primary Containment Purge & Standby Gas Treatment
- LR-061, Sheet B, Revision 1, Primary Containment Purge & Standby Gas Treatment

Components Subject to an AMR

The component types requiring an AMR for the Primary Containment Purge System and their intended functions are shown in Table 2.3.3.B.20-1. The AMR results for these component types are provided in Table 3.3.2.B-20.

Table 2.3.3.B.20-1
NMP2 Primary Containment Purge System

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached)
Debris Screens	Filter
Flow Element	Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Plateout/Holdup Structural Integrity (Attached)
Valves	Pressure Boundary Plateout/Holdup Structural Integrity (Attached)

2.3.3.B.21 NMP2 PROCESS SAMPLING SYSTEM

System Description

The NMP2 Process Sampling System is designed to monitor selected plant process streams, and provide grab sample points to back up the continuous analyzers and allow laboratory analysis of other process streams. The process sampling system is a water chemistry analysis system involving multipoint sample panels and grab sample sinks in the Reactor Building, Turbine Building, and Radwaste Building. The Process Sampling System consists of the following subsystems: Post Accident Sampling System, Radwaste Building Sampling System, Reactor Plant Sampling System, and Turbine Plant Sampling System. Miscellaneous sample points are provided on individual process systems where needed. Further information on these subsystems is provided below.

The Post Accident Sampling System is designed to obtain representative liquid and gas samples from within the primary containment for radiological analysis in association with the possible consequences of a LOCA. The Radwaste Building Sampling System is used for obtaining grab samples for monitoring the Radioactive Liquid Waste Management and Radwaste Auxiliary Steam System Drain Coolers. The Reactor Plant Sampling System monitors the quality of reactor coolant and various reactor plant fluids. The Turbine Plant Sampling System monitors the quality of reactor grade water flowing in the Turbine Building.

The Process Sampling System consists of the necessary piping, valves, coolers, instrumentation, readouts, alarms, computer points, and analyzers to draw and analyze samples of the various plant process streams. Typically, a sample is piped from the system to the sample panel via an air operated blocking valve. A local sample cooler is used where required. For those samples dependent on temperature, a constant temperature bath is provided at each sample panel. At the panel, the sample is reduced in pressure, as required, by means of a manually operated pressure reducing valve.

- This system is in scope for license renewal for the following reason: It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the piping and fittings, flow indicators, valves and heat exchangers in the Post Accident Sampling and Reactor Plant Sampling Systems. NSR components contained in these systems and located in the Reactor Building are subject to an AMR. The NSR components in the Decontamination Area, Radwaste Building and Turbine Building are not within the scope of license renewal as they are not credited for mitigation of current licensing basis events, do not contain any SR/NSR interfaces, nor in the vicinity of any SR components.

USAR Reference(s)

More information about the Process Sampling System can be found in USAR Sections 1.2.10.7, 1.10.II.B.3, and 9.3.2.

License Renewal Drawing(s)

Components requiring an AMR for the Process Sampling System are highlighted on the following drawing:

- LR-017, Sheet G, Revision 1, Reactor Plant Sampling
- LR-106, Sheet A, Revision 0, Post Accident Sampling

Components Subject to an AMR

The component types requiring an AMR for the Process Sampling System and their intended functions are shown in Table 2.3.3.B.21-1. The AMR results for these component types are provided in Table 3.3.2.B-21.

Table 2.3.3.B.21-1
NMP2 Process Sampling System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Flow Indicators	Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial) Plateout/Holdup
Valves	Leakage Boundary (Spatial) Plateout/Holdup

2.3.3.B.22 NMP2 RADIATION MONITORING SYSTEM

System Description

The NMP2 Radiation Monitoring System is designed to initiate appropriate manual or automatic protective action to limit the potential release of radioactive materials from the reactor vessel, primary and secondary containment, and fuel storage areas if predetermined radiation levels are exceeded in major process/effluent streams, and to provide main control room personnel with radiation level indication throughout the course of an accident. The Radiation Monitoring System consists of a computer-based Digital Radiation Monitoring System, a computer-based Gaseous Effluent Monitoring System, and the Main Steam Line Radiation Monitors. Further information on these systems is provided below.

The Digital Radiation Monitoring System measures, evaluates, and reports radioactivity in process streams and liquid effluents, and annunciates and/or initiates an automatic control function for abnormal system or plant operating conditions. Each monitoring channel has a microprocessor located near the detector or sample panel. The Digital Radiation Monitoring System computer system continuously polls the local microprocessors collecting and storing radiation levels, alarms, and status information for these monitoring channels.

The Gaseous Effluent Monitoring System measures, evaluates, and reports radioactivity in gaseous effluents. It also provides annunciation if release levels approach limits specified in the Offsite Dose Calculation Manual. The Gaseous Effluent Monitoring System also provides real time noble gas isotopic analysis and continuous iodine and particulate sample collection for main stack, Radwaste Building, and Reactor Building vent releases.

The Main Steam Line Radiation Monitoring System monitors the gamma radiation level exterior to the main steam lines. In the event of a gross release of fission products from the core, this monitoring system provides annunciation in the control room. The system consists of four redundant instrument channels. Each channel consists of a local on-line steam detector and a main control room radiation monitor with an auxiliary trip unit for signals to the mechanical vacuum pumps.

Portions of the system consist of off-line gas and liquid monitors which consist of piping, filters, pumps, sampler/detectors, valves, and instruments. Typically, the sample fluid flows from the inlet, past a grab sampler connection, through a pump, and then into the sampler/detector. The sample is returned to the system downstream of the inlet.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the Radiation Monitoring System can be found in USAR Sections 11.5.2 and 12.3.4.

License Renewal Drawing(s)

- Components requiring an AMR for the Radiation Monitoring System are highlighted on the following drawings:LR-11, Sheet C, Revision 1, Service Water System

- LR-11, Sheet H, Revision 1, Service Water System
- LR-11, Sheet P, Revision 1, Service Water System
- LR-52, Sheet G, Revision 0, Reactor Building Ventilation
- LR-53, Sheet B, Revision 0, Control Building Ventilation
- LR-82, Sheet A, Revision 1, Containment Atmosphere Monitoring
- LR-400758, P&ID DRMS Offline Liquid Monitor Service Water System
- LR-400759, P&ID DRMS Offline Gas Particulate Monitor Reactor Building Ventilation
- LR-400762, P&ID DRMS Offline Gas Monitor Control Room Ventilation
- LR-400863, P&ID DRMS Offline Gas Particulate Monitor Containment Monitoring System

Components Subject to an AMR

The component types requiring an AMR for the Radiation Monitoring System and their intended functions are shown in Table 2.3.3.B.22-1. The AMR results for these component types are provided in Table 3.3.2.B-32.

Table 2.3.3.B.22-1
NMP2 Radiation Monitoring System

Component Type	Intended Functions
Bolting	Pressure Boundary
Filters	Pressure Boundary Filter
Flow Elements	Pressure Boundary Throttle
Piping and Fittings	Pressure Boundary
Pumps	Pressure Boundary
Valves	Pressure Boundary

2.3.3.B.23 NMP2 REACTOR BUILDING CLOSED LOOP COOLING WATER SYSTEM

System Description

The NMP2 Reactor Building Closed Loop Cooling, (RBCLC) Water System is designed to remove heat from various reactor auxiliary equipment located in the Primary Containment, Reactor Building and Turbine Building. The RBCLC Water System is cooled by the Service Water System (Section 2.3.3.B.27), and makeup water is supplied from the Makeup Water System (Section 2.3.3.B.18). The major components of the RBCLC Water System are pumps, piping, heat exchangers, expansion tanks, and valves. During normal plant operation, the system provides an intermediate barrier between systems containing radioactive products and the Service Water System, which precludes a direct release of radioactive products into the environment.

The RBCLC Water System is a closed loop system that provides cooling to auxiliary equipment located in the Primary Containment, Reactor Building, and Turbine Building. It consists of a primary loop with three main cooling water pumps, three booster pumps, three heat exchangers, one expansion tank, piping, valves, and instrumentation. A secondary loop dedicated to cooling the instrument air compressors is provided with two pumps, two heat exchangers, an expansion tank, piping, valves, and instrumentation. The secondary loop rejects heat to the primary loop. The RBCLC Water System pumps water through the shell side of its heat exchangers, which are cooled by the Service Water System (Section 2.3.3.B.27). Normally, a combination of any two main pumps, two booster pumps, and two heat exchangers is capable of providing this maximum heat removal capacity with service water temperature up to about 72°F. During normal plant operations, two main pumps, two booster pumps, and two heat exchangers are in operation, and the third main pump, booster pump, and heat exchanger are in standby. The RBCLC Water System branches out to different locations in the plant to supply various loads with cooling water. The water is then returned to the suction of the pumps, completing the system's closed loop. The Drywell Coolers have been transferred to the RBCLC Water System also.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's

regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include piping and fittings, and valves associated with RBCLC containment penetrations, the temporary drywell cooling connections, supplies and returns for the Spent Fuel Pool Cooling heat exchangers, supplies and returns for the Residual Heat Removal pump seal water coolers, and Drywell Coolers. The components subject to an AMR for this system also include the NSR flow elements, heat exchangers, unit coolers, piping, fittings, and valves containing liquid in the Primary Containment Structure and Reactor Building (secondary containment). The NSR portions of the system in the Turbine Building are not within the scope of license renewal as they are not credited for mitigation of current licensing basis events, do not contain any SR/NSR interfaces, nor in the vicinity of any SR components.

USAR Reference(s)

More information about the RBCLC Water System can be found in USAR Section 9.2.2.

License Renewal Drawing(s)

Components requiring an AMR for the RBCLC Water System are highlighted on the following drawings:

- LR-011, Sheet C, Revision 1, Service Water System
- LR-011, Sheet G, Revision 1, Service Water System
- LR-011, Sheet P, Revision 1, Service Water System
- LR-013, Sheet A, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-013, Sheet B, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-013, Sheet C, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-013, Sheet D, Revision 1, Reactor Building Closed Loop Cooling Water

- LR-013, Sheet E, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-013, Sheet F, Revision 0, Reactor Building Closed Loop Cooling
- LR0-13, Sheet G, Revision 0, Reactor Building Closed Loop Cooling
- LR-031, Sheet E, Revision 1, Residual Heat Removal
- LR-031, Sheet F, Revision 1, Residual Heat Removal
- LR-031, Sheet G, Revision 1, Residual Heat Removal
- LR-038, Sheet C, Revision 1, Fuel Pool Cooling & Clean Up
- LR-060, Sheet A, Revision 0, Drywell Cooling

Components Subject to an AMR

The component types requiring an AMR for the RBCLC Water System and their intended functions are shown in Table 2.3.3.B.23-1. The AMR results for these component types are provided in Table 3.3.2.B-22.

Table 2.3.3.B.23-1
NMP2 Reactor Building Closed Loop Cooling Water System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Flow Element	Leakage Boundary (Spatial) Structural Integrity (Attached)
Heat Exchangers	Structural Integrity (Spatial) NSR Structural Support
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Unit Coolers	Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.24 NMP2 REACTOR BUILDING HVAC SYSTEM

System Description

The NMP2 Reactor Building HVAC System is designed to remove heat generated within the drywell and maintain ambient temperature within design limits, thus providing an environment that ensures optimum performance of equipment. Additionally, the Reactor Building HVAC System is an alternative system for venting the primary containment to the atmosphere, if necessary. The Reactor Building HVAC System consists of the following subsystems: Drywell Cooling, Primary Containment Purge, and All Other Reactor Building Areas.

The NMP2 Drywell Cooling System conditions the air inside the drywell, where unit coolers control drywell temperature and pressure. The Drywell Cooling System consists of unit coolers containing fans, cooling coils, dampers, and controls, together with ductwork and ductwork accessories. Air is drawn from the drywell, circulated through the unit coolers, and returned to the drywell. Cooling water is piped to each cooling coil from the Reactor Building Closed Loop Cooling Water System (Section 2.3.3.B.23). The unit coolers use automatic controls and instrumentation to regulate air temperature.

The Primary Containment Purge subsystem is described in further detail in Section 2.3.3.B.20.

For the All Other Reactor Building Areas subsystem, the supply ventilation air handling unit assembly consists of an air intake, prefilter, filter, heating coil, cooling coil, dampers, controls, and supply fans. Three vaneaxial fans are provided; two operate normally while one is in standby. Ventilation air is exhausted through an exhaust duct network to the exhaust air systems. The system operates in both a normal operation mode and an emergency operation mode. In the normal operation mode, supply air is distributed through ductwork to various areas, including the spent fuel pool area. If the radiation level exceeds a predetermined limit, or a LOCA signal is received, the normal operation mode is automatically shut down and the emergency operation recirculation air system is actuated as well as the unit space coolers. The emergency operation recirculation air system consists of two recirculation unit coolers, together with ductwork and ductwork accessories and controls, arranged to provide recirculation, mixing, and cooling for the reactor building. The emergency recirculation unit cooler takes suction through a network of return air ductwork from each floor level below the refueling floor. Air is recirculated into the Reactor Building through a network of recirculated air ductwork and accessories above the refueling floor to provide entrainment and mixture with the surrounding air.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include Reactor Building general area unit space coolers, Reactor Building isolation dampers, Residual Heat Removal pump room unit space coolers, electrical motor control center area unit space coolers, emergency recirculation unit coolers, Residual Heat Removal heat exchanger room unit space coolers, Low-Pressure Core Spray pump room unit space coolers, High-Pressure Core Spray pump room unit space coolers, Reactor Core Isolation Cooling Pump Room unit space coolers, Standby Gas Treatment Room unit space coolers, above refueling floor radiation sampling subsystems, below refueling floor radiation sampling subsystems, fire dampers, associated ducting, piping and fittings, valves, and dampers.

USAR Reference(s)

More information about the Reactor Building HVAC System can be found in USAR Section 9.4.2.

License Renewal Drawing(s)

Components requiring an AMR for the Reactor Building HVAC System are highlighted on the following drawings:

- LR-052, Sheet A, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet B, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet C, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet D, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet E, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet F, Revision 0, Rx Building Ventilation & Cat I Area Coolers
- LR-052, Sheet G, Revision 0, Rx Building Ventilation & Cat I Area Coolers

- LR-052, Sheet H, Revision 1, Rx Building Ventilation & Cat I Area Coolers

Components Subject to an AMR

The component types requiring an AMR for the Reactor Building HVAC System and their intended functions are shown in Table 2.3.3.B.24-1. The AMR results for these component types are provided in Table 3.3.2.B-23.

Table 2.3.3.B.24-1
NMP2 Reactor Building HVAC System

Component Type	Intended Functions
Bolting	Pressure Boundary
Ducting	Pressure Boundary
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Piping and Fittings	Pressure Boundary
Pumps	Pressure Boundary
Radiation Sample Points	Pressure Boundary
Unit Coolers	Heat Transfer Pressure Boundary
Valves and Dampers (includes fire dampers)	Pressure Boundary Fire Barrier

2.3.3.B.25 NMP2 REACTOR WATER CLEANUP SYSTEM

System Description

The purpose of the NMP2 Reactor Water Cleanup System is to maintain high reactor water quality and remove excess reactor coolant from the RPV during all modes of plant operation. High water quality is maintained to minimize the fouling of heat transfer surfaces and limit impurities available for neutron activation. The Reactor Water Cleanup System provides the means to maintain water chemistry within the limits outlined in Regulatory Guide 1.56, Revision 1. The Reactor Water Cleanup System recirculates a portion of reactor coolant through a filter demineralizer to remove particulate and dissolved impurities from the reactor coolant. It also removes excess coolant from the reactor system under controlled conditions.

The major components of the Reactor Water Cleanup System are located outside the drywell. These components include pumps, regenerative and nonregenerative heat exchangers, filter demineralizers, and associated precoat equipment. Inlet water for the Reactor Water Cleanup System is taken from the RPV via recirculation pump suction lines and the vessel bottom head drain line. The cleanup pumps then pump the inlet water through the tube side of the regenerative and non-regenerative heat exchangers. Flow is normally directed through the filter-demineralizer system and then the shell side of the regenerative heat exchanger before returning to the RPV through the Feedwater System lines (Section 2.3.4.B.3).

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The components subject to an AMR include safety related piping, valves, flow elements, restriction orifices, and bolting. The components subject to an AMR for this system also include the NSR filters/strainers, flow elements, heat exchangers, pumps, orifices, piping, fittings, and valves containing liquid in the Primary Containment Structure and Reactor Building (secondary containment). The NSR Reactor Water Cleanup demineralizers are not WSLR since they are housed in individual rooms that do not contain SR SSCs that could be impact due to spatial interactions.

USAR Reference(s)

More information about the Reactor Water Cleanup System can be found in USAR Section 5.4.8.

License Renewal Drawing(s)

Components requiring an AMR for the Reactor Water Cleanup System are highlighted on the following drawings:

- LR-037, Sheet A, Revision 1, Reactor Water Cleanup System

- LR-037, Sheet B, Revision 1, Reactor Water Cleanup System

- LR-037, Sheet C, Revision 0, Reactor Water Cleanup System

- LR-037, Sheet D, Revision 0, Reactor Water Cleanup System
- LR-037, Sheet E, Revision 0, Reactor Water Cleanup System
- LR-037, Sheet F, Revision 0, Reactor Water Cleanup System

Components Subject to an AMR

The component types requiring an AMR for the Reactor Water Cleanup System and their intended functions are shown in Table 2.3.3.B.25-1. The AMR results for these component types are provided in Table 3.3.2.B-24.

Table 2.3.3.B.25-1
NMP2 Reactor Water Cleanup System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filter/Strainer	Leakage Boundary (Spatial)
Flow Elements	Pressure Boundary Leakage Boundary (Spatial) Plateout/Holdup Structural Integrity (Attached)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Plateout/Holdup Structural Integrity (Attached)
Pumps	Leakage Boundary (Spatial)
Orifices	Throttle Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Plateout/Holdup Structural Integrity (Attached)

2.3.3.B.26 NMP2 SEAL WATER SYSTEM (REMOVED)

The NMP2 Seal Water System has been removed from the scope of license renewal since it has been determined that it does not meet any of the criteria of 10 CFR 54.4. The original LRA included this system WSLR under criterion 54.4(a)(2). However, based upon detailed evaluations, this system is not credited for mitigation of any current licensing basis event, does not contain any SR/NSR interfaces, nor introduce any spatial interactions with SR SSCs. Therefore, the Seal Water System is not within the scope of license renewal.

2.3.3.B.27 NMP2 SERVICE WATER SYSTEM

System Description

The NMP2 Service Water System is designed to provide a reliable supply of cooling water for essential components and systems. The Service Water System provides cooling water to the secondary sides of the RBCLC Water System (Section 2.3.3.B.23) and Turbine Building Closed Loop Cooling Water System heat exchangers during normal plant operation and planned outages. Service water is also supplied to the secondary side of the Residual Heat Removal System (Section 2.3.2.B.7) heat exchangers during planned unit outages. In addition, the system is designed to provide makeup water to the Circulating Water System (not in scope for license renewal) and cooling water to miscellaneous nonessential Turbine Building and Reactor Building components during normal plant operation.

The Service Water System at NMP2 is a once-through system which utilizes raw lake water from Lake Ontario. Lake water is provided to the service water pump wells from the intake tunnel through the cooling water channels, passing through trash racks and traveling screens located in the screen and pump house. Six service water pumps take their suction at the pump house, and water is pumped from the intake bay through strainers located in the discharge line of each pump. From the strainers, the service water is directed to a common header in the Screenwell Building. The Service Water System is designed with three loops. Two are essential and one is nonessential. Two takeoffs from the common screenwell header supply service water to the essential Reactor Building components and another takeoff supplies service water to the Turbine Building nonessential components during normal plant operation. Service water return is combined in two separate discharge headers and then returned to the lake.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR includes the service water pumps, condensing water pumps and the associated distribution system of piping and fittings, flow orifices, valves, and strainers to the system heat loads. The components subject to an AMR for this system also include the NSR flow elements, piping, fittings, temperature elements and valves in the pipe tunnel and Turbine Building in the vicinity of SR SSCs and/or within the boundary between the SR/NSR interface and the first seismic or equivalent anchor. The remaining NSR portions of the Service Water System are not within the scope of license renewal as they are not credited for mitigation of current licensing basis events, do not contain any SR/NSR interfaces, nor in the vicinity of any SR components.

USAR Reference(s)

More information about the Service Water System can be found in USAR Section 9.2.1.

License Renewal Drawing(s)

Components requiring an AMR for the Service Water System are highlighted on the following drawings:

- LR-011, Sheet A, Revision1, Service Water System
- LR-011, Sheet B, Revision 0, Service Water System
- LR-011, Sheet C, Revision 1, Service Water System
- LR-011, Sheet D, Revision 1, Service Water System
- LR-011, Sheet E, Revision 1, Service Water System
- LR-011, Sheet F, Revision 1, Service Water System
- LR-011, Sheet G, Revision 1, Service Water System
- LR-011, Sheet H, Revision 1, Service Water System
- LR-011, Sheet J, Revision 1, Service Water System
- LR-011, Sheet K, Revision 0, Service Water System
- LR-011, Sheet L, Revision 1, Service Water System

- LR-011, Sheet M, Revision 1, Service Water System
- LR-011, Sheet P, Revision 1, Service Water System
- LR-011, Sheet Q, Revision 1, Service Water System
- LR-013, Sheet B, Revision 1, Reactor Building Closed Loop Cooling
- LR-013, Sheet D, Revision 1, Reactor Building Closed Loop Cooling
- LR-053, Sheet A, Revision 1, Control Building Chilled Water

Components Subject to an AMR

The component types requiring an AMR for the Service Water System and their intended functions are shown in Table 2.3.3.B.27-1. The AMR results for these component types are provided in Table 3.3.2.B-26.

Table 2.3.3.B.27-1
NMP2 Service Water System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Filter Pressure Boundary
Flow Elements	Pressure Boundary Structural Integrity (Attached)
Orifices	Throttle Pressure Boundary
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary
Temperature Elements	Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.28 NMP2 SPENT FUEL POOL COOLING AND CLEANUP SYSTEM

System Description

The NMP2 Spent Fuel Pool Cooling and Cleanup System is designed to remove the decay heat released from the spent fuel elements and maintain a specified fuel pool water temperature, water clarity, and water level. The Spent Fuel Pool Cooling and Cleanup System is also designed to provide cooling to the spent fuel pool, reactor cavity pool, and reactor internals during plant refueling outages.

The Spent Fuel Pool Cooling and Cleanup System consists of pumps, skimmer surge tanks, heat exchangers, filter/demineralizers, piping, instrumentation, and valves. The cooling section can operate independently from the cleanup section. For cooling, the fuel pool water flows over adjustable weirs into the spent fuel pool skimmer surge tanks. The Spent Fuel Pool Cooling and Cleanup System pumps take suction from the skimmer surge tanks and circulate the spent fuel pool water through one or both of the two heat exchangers, where it is cooled by the RBCLC Water System (Section 2.3.3.B.23). The water then returns to the Spent Fuel Pool through spargers located at the bottom of the Spent Fuel Pool. The Service Water System (Section 2.3.3.B.27) can also be used to remove heat from the heat exchangers. For the cleanup loop, the spent fuel pool circulating pumps circulate the water through one or two filter demineralizers arranged in parallel and return it to the spent fuel pool through the diffusers associated with the Spent Fuel Pool Cooling and Cleanup System. The cleanup section of the system can be isolated from the cooling section.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the two Spent Fuel Pool Cooling and Cleanup System pumps, the Filter/Demineralizer Holding pumps and the Cask Handling Transfer pump, Spent Fuel Pool Cooling and Cleanup water heat exchangers, skimmer surge tanks, precoat tanks, and the associated system piping and fittings, strainers, flow orifices, flow elements and valves. This includes NSR piping and components associated with the filter/demineralizer subsystem and the discharge of the Cask Handling Transfer pump. The remaining NSR portions of the Spent Fuel Pool Cooling and Cleanup System are not within the scope of license renewal as they are not credited for mitigation of current licensing basis events, do not contain any SR/NSR interfaces, nor in the vicinity of any SR components.

USAR Reference(s)

More information about the Spent Fuel Pool Cooling and Cleanup System can be found in USAR Section 9.1.3.

License Renewal Drawing(s)

Components requiring an AMR for the Spent Fuel Pool Cooling and Cleanup System are highlighted on the following drawings:

- LR-011, Sheet E, Revision 1, Service Water System
- LR-011, Sheet F, Revision 1, Service Water System
- LR-013, Sheet E, Revision 1, Reactor Building Closed Loop Cooling Water
- LR-017, Sheet G, Revision 1, Sampling System
- LR-031, Sheet A, Revision 1, Residual Heat Removal System
- LR-031, Sheet B, Revision 1, Residual Heat Removal System
- LR-038, Sheet A, Revision 1, Fuel Pool Cooling & Clean Up
- LR-038, Sheet B, Revision 1, Fuel Pool Cooling & Clean Up
- LR-038, Sheet C, Revision 1, Fuel Pool Cooling & Clean Up

Components Subject to an AMR

The component types requiring an AMR for the Spent Fuel Pool Cooling and Cleanup System and their intended functions are shown in Table 2.3.3.B.28-1. The AMR results for these component types are provided in Table 3.3.2.B-27.

Table 2.3.3.B.28-1
NMP2 Spent Fuel Pool Cooling and Cleanup System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support

Component Type	Intended Functions
	Structural Integrity (Attached)
Flow Elements	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Heat Exchangers	Heat Transfer Pressure Boundary
Orifices	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pumps	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Tanks	Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.29 NMP2 STANDBY DIESEL GENERATOR FUEL OIL SYSTEM

System Description

The NMP2 Standby Diesel Generator Fuel Oil System is designed to deliver sufficient fuel oil flow to the Emergency Diesel Generators and provide fuel oil storage capacity for each diesel generator for seven days of continuous diesel generator operation without interconnection to any other onsite fuel oil system.

The system consists of tanks, pumps, piping, valves, and strainers. The Emergency Diesel Generators are equipped with a fuel oil day tank, which has enough fuel for approximately one hour of running time plus a margin of ten percent at the highest allowed gravity. The day tank is elevated above the Emergency Diesel Generator and is kept full of fuel oil from the fuel oil storage tank by the fuel oil transfer pumps. The elevated location of the tank provides adequate net positive suction head to the engine-driven fuel pump of the diesel engine. Each storage tank is filled from its own tank truck fill station located in the yard. Electric oil transfer pumps mounted on top of each tank permit the transfer of fuel oil to the day tanks. One fuel oil transfer pump is capable of supplying the maximum fuel demand of a standby diesel generator. Each pump discharges through a strainer with an automatic shutoff in case of high differential pressure. After passing through the strainer, the fuel oil discharges into the day tank.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of identified the functions in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the fuel oil transfer pumps, the fuel injection pumps, the engine-driven fuel oil pumps, the standby fuel oil pumps, the engine-driven fuel oil booster pumps, the fuel oil coolers, the standby diesel generator fuel oil storage tanks, the High-Pressure Core Spray diesel generator storage tank, the standby diesel generator fuel oil day tanks, the High-Pressure Core Spray diesel generator fuel oil day tank, the fuel pump suction duplex strainers, the pump suction simplex strainers, and the connecting valves and piping and fittings. The NSR fill and drain connection and sounding tube connection to the diesel fuel storage tanks are also subject to an AMR.

USAR Reference(s)

More information about the Standby Diesel Generator Fuel Oil System can be found in USAR Section 9.5.4.

License Renewal Drawing(s)

Components requiring an AMR for the Standby Diesel Generator Fuel Oil System are highlighted on the following drawings:

- LR-066, Sheet B, Revision 1, Miscellaneous Drains
- LR-104, Sheet B, Revision 1, Standby Diesel Gen. System
- LR-104, Sheet C, Revision 1, Standby Diesel Gen. System
- LR-104, Sheet F, Revision 0, Fuel Oil Schematic Standby Diesel Generator System

Components Subject to an AMR

The component types requiring an AMR for the Standby Diesel Generator Fuel Oil System and their intended functions are shown in Table 2.3.3.B.29-1. The AMR results for these component types are provided in Table 3.3.2.B-28.

Table 2.3.3.B.29-1
NMP2 Standby Diesel Generator Fuel Oil System

Component Type	Intended Functions
Bolting	Pressure Boundary Structural Integrity (Attached)
Filters/Strainers	Filter Pressure Boundary Structural Integrity (Attached)
Flow Elements	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary Structural Integrity (Attached)
Pumps	Pressure Boundary
Tanks	Pressure Boundary
Valves	Pressure Boundary Structural Integrity (Attached)

2.3.3.B.30 NMP2 STANDBY DIESEL GENERATOR PROTECTION (GENERATOR) SYSTEM

System Description

The NMP2 Standby Diesel Generator Protection (Generator) System is designed to provide for the operation of emergency systems and ESFs during and following the shutdown of the reactor when the preferred power supply is not available. The standby power supply system consists of three standby diesel generators. One generator is dedicated to each of the three divisions of the safety-related electric power distribution system feeding each Class 1E load group. Any two of the three standby diesel generators have sufficient capacity to start and supply all needed ESFs and emergency shutdown loads in case of a LOCA and/or Loss-of-Offsite Power (LOOP).

The Emergency Diesel Generators are normally maintained in a standby status. In case of a LOOP, or degraded offsite voltage condition, the Emergency Diesel Generators automatically start, accelerate to rated speed and voltage, and start picking up loads sequentially. In case of a LOCA, the Emergency Diesel Generators automatically start, accelerate to rated speed, voltage, and frequency, and run unloaded. Should any subsequent LOOP occur, the Emergency Diesel Generators would then energize their respective busses. The Standby Diesel Generator Protection (Generator) System also includes the generator support systems for cooling water and lube oil, which are discussed in the Generator Standby Lube Oil System (Section 2.3.3.B.15).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include the jacket water pumps, the jacket water heat exchangers, lubrication oil coolers, intercoolers, and the associated system piping, fittings, and valves associated with the Division I, II, and III Emergency Diesel Generators.

USAR Reference(s)

More information about the Standby Diesel Generator Protection (Generator) System can be found in USAR Sections 1.2.9.17 and 8.3.1.

License Renewal Drawing(s)

Components requiring an AMR for the Standby Diesel Generator Protection (Generator) System are highlighted on the following drawings:

- LR-104, Sheet D, Revision 0, Jacket Water Standby Diesel Generator System
- LR-104, Sheet E, Revision 0, Lube Oil Standby Diesel Generator System
- LR-104, Sheet F, Revision 0, Fuel Oil Schematic Standby Diesel Generator System

Components Subject to an AMR

The component types requiring an AMR for the Standby Diesel Generator Protection (Generator) System and their intended functions are shown in Table 2.3.3.B.30-1. The AMR results for these component types are provided in Table 3.3.2.B-29.

Table 2.3.3.B.30-1
NMP2 Standby Diesel Generator Protection (Generator) System

Component Type	Intended Functions
Bolting	Pressure Boundary
Heat Exchangers	Heat Transfer Pressure Boundary
Piping and Fittings	Pressure Boundary
Pumps	Pressure Boundary
Sight Glass	Pressure Boundary
Tank	Pressure Boundary
Valves	Pressure Boundary

2.3.3.B.31 NMP2 STANDBY LIQUID CONTROL SYSTEM

System Description

The NMP2 Standby Liquid Control System is designed to inject a boron solution into the reactor when needed to bring the core to a subcritical condition. This provides an alternate method to shutdown the reactor in the event that sufficient control rods cannot be inserted in the reactor core to accomplish shutdown and cool down in the normal manner. This system is designed to provide sufficient negative reactivity to shut down the reactor and keep the reactor from going critical as it cools by mixing a neutron absorber with the primary reactor coolant. The neutron absorber is injected within the core zone via the High Pressure Core Spray System (Section 2.3.2.B.3) injection line. The Standby Liquid Control System can be initiated manually or automatically by the Redundant Reactivity Control System (Section 2.5.B.19).

The Standby Liquid Control System consists of a boron solution tank, test water tank, two positive displacement pumps, two explosive valves, two motor-operated pump suction valves, and associated local valves and controls. The pumps take suction on the boron tank and inject the solution through the explosive valves and from there directly into the high pressure core spray line downstream of the inboard containment isolation check valve. The sodium pentaborate solution is discharged radially over the top of the core through the high pressure core spray sparger.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for anticipated transients without scram (10 CFR 50.62).

The components subject to an AMR include the boron solution tank and inlet piping and valves for the sodium pentaborate; positive displacement pumps; explosive valves; motor-operated pump suction valves; and all associated piping, expansion joints, and valves between the boron solution tank and the reactor vessel. The components subject to AMR also include the NSR piping, fittings, test tank and valves in the system.

USAR Reference(s)

More information about the Standby Liquid Control System can be found in USAR Section 9.3.5.

License Renewal Drawing

Components requiring an AMR for the Standby Liquid Control System are highlighted on the following drawing:

- LR-036, Sheet A, Revision 1, Standby Liquid Control

Components Subject to an AMR

The component types requiring an AMR for the Standby Liquid Control System and their intended functions are shown in Table 2.3.3.B.31-1. The AMR results for these component types are provided in Table 3.3.2.B-30.

Table 2.3.3.B.31-1
NMP2 Standby Liquid Control System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Expansion Joint	Pressure Boundary
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Pressure Boundary Structural Integrity (Attached)
Expansion Joint	Pressure Boundary
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached) Pressure Boundary
Pumps	Pressure Boundary
Orifices	Throttle Pressure Boundary
Tanks	Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Temperature Elements	Pressure Boundary
Valves	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.32 NMP2 YARD STRUCTURES VENTILATION SYSTEM

System Description

The NMP2 Yard Structures Ventilation System is designed to provide heating and outside air ventilation for the Service Water pump bays, Screenwell Building, fire pump rooms, Demineralizer Water Storage Tank Building, Condensate Storage Tank Building, electrical bay, screenhouse, and Chiller Building. Each of the Service Water pump bays is also equipped with redundant unit coolers which maintain the space temperature within design limits by rejecting heat to the Service Water System (Section 2.3.3.B.27). The Yard Structures Ventilation System also provides space cooling to the Service Water pump bays ensuring that ambient temperature remains within the pump operating design limits.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

The components subject to an AMR include the fan and cooling unit housings, the ducting, damper housings for the ventilation system in the Service Water Pump Bays in the Screenwell Building, and the fire dampers in the Screenwell Building, the Auxiliary Boiler Building, the Demineralizer Water Storage Tank Building, and the Diesel Fire Pump Room.

USAR Reference(s)

More information about the Yard Structures Ventilation System can be found in USAR Section 9.4.7 and Section 9B.4.4.3.4.

License Renewal Drawing(s)

Components requiring an AMR for the Yard Structures Ventilation System are highlighted on the following drawings:

- LR-011, Sheet M, Revision 1, Service Water System Piping and Instrument Diagram
- LR-058, Sheet A, Revision 0, Screenwell & Diesel Fire Pump Room Vent
- LR-058, Sheet B, Revision 0, Screenwell & Diesel Fire Pump Room Vent

Components Subject to an AMR

The component types requiring an AMR for the Yard Structures Ventilation System and their intended functions are shown in Table 2.3.3.B.32-1. The AMR results for these component types are provided in Table 3.3.2.B-31.

Table 2.3.3.B.32-1
NMP2 Yard Structures Ventilation System

Component Type	Intended Functions
Blowers	Pressure Boundary
Dampers (includes fire dampers)	Fire Barrier Pressure Boundary
Ducting	Pressure Boundary
Unit Coolers	Heat Transfer Pressure Boundary

2.3.3.B.33 NMP2 AUXILIARY BOILER SYSTEM

System Description:

The NMP2 Auxiliary Boiler System is designed to supply primary loads during plant shutdown including building heating, radwaste process reboiler system, and other auxiliary system heat exchangers. The system consists of two electric boilers, three boiler feed pumps, a deaerator, a chemical feed system, and associated piping, fittings and valves.

As the auxiliary boilers are not normally used to augment the auxiliary steam system, provisions are provided where auxiliary boiler steam may be used to provide a heat source to the Off-gas System and clean steam reboilers prior to start-up.

The auxiliary boiler chemical feed system consists of a sodium sulfite feed tank, agitator, and a sodium sulfite feed pump. The chemical feed system also consists of a sodium phosphate tank and agitator, and a sodium phosphate pump.

This system is in scope for license renewal for the following reasons:

- It contains NSR SC's whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to AMR include electric boilers, steam piping and fittings, valves, auxiliary feed water pumps and associated fittings, valves and restricting orifices, sample coolers, deaerator, glass sight -tubes, chemical feed system tanks, pumps, piping, and valves located within the Auxiliary Boiler room.

<u>USAR Reference(s)</u>

More information about the Auxiliary Boiler System can be found in USAR

<u>Section 9.5.10.</u>

<u>License Renewal Drawing(s)</u>

Components requiring an AMR for the Auxiliary Boiler System are highlighted on the following drawings:

- <u>LR-048, Sheet A, Revision 0, Auxiliary Boiler System</u>
- <u>LR-048, Sheet B, Revision 0, Auxiliary Boiler System</u>
- <u>LR-048, Sheet C, Revision 0, Auxiliary Boiler System</u>

Components Subject to an AMR

The component types requiring an AMR for the Auxiliary Boiler System and their intended functions are shown in Table 2.2.3.B.33-1. The AMR results for these component types are provided in Table 3.3.2.B-33.

Table 2.3.3.B.33-1
NMP2 Auxiliary Boiler System

Component Type	Intended Functions
Accumulator	Leakage Boundary (Spatial)
Bolting	Leakage Boundary (Spatial)
Filter Housing	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Restricting Orifices	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.B.34 NMP2 CIRCULATING WATER SYSTEM

System Description:

The function of the NMP2 Circulating Water System is to provide the main condenser with a continuous supply of cooling water. The water is used to remove the heat rejected from the turbine exhaust and turbine bypass steam as well as from other equipment over the full range of operating loads.

The major components of the closed loop Circulating Water System include the tubeside of the main condenser, the cooling tower, and six circulating water pumps. Water leaves the cooling tower cold water basin through a discharge flume that contains six bays of stationary screens. The screens are located within a closed cooling tower screenhouse with hoists and facilities available for removing and cleaning the screens. Makeup water for the Circulating Water System is obtained from the Service Water System,

During the winter months, warm water from the Circulating Water System is used to temper the lake intake water. The tempering water is taken from the circulating water pipe downstream of the condenser outlet and is piped to the screenwell intake bays where it is mixed with the lake intake flow.

This system is in scope for license renewal for the following reasons:

- It contains NSR SC's whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to AMR include piping, fittings, and valves associated with the Circulating Water System blow down line to the Service Water Discharge Bay, and the Circulating Water System tempering line to the Service Water System.

USAR Reference(s)

More information about the Circulating Water System can be found in

USAR Section 10.4.5.

License Renewal Drawing(s)

Components requiring an AMR for the Circulating Water System are highlighted on the following drawings:

- LR-010, Sheet C, Circulating Water, Acid & Hypochlorite
- LR-010, Sheet D, Circulating Water, Acid & Hypochlorite

Components Subject to an AMR

The component types requiring an AMR for the Circulating Water System and their intended functions are shown in Table 2.3.3.B.34-1. The AMR results for these component types are provided in Table 3.3.2.B-34.

Table 2.3.3.B.34-1
NMP2 Circulating Water System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial) Structural Integrity (Attached)
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached)
Valves	Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.3.B.35 MAKEUP WATER TREATMENT SYSTEM

System Description

The NMP2 Makeup Water Treatment System processes domestic water to supply the Makeup Water Storage and Transfer System with demineralized water. The system will also provide domestic water from the Filtered Water Storage Tank for seal water to the Circulating Water System pumps.

The Makeup Water Treatment System consists of the following equipment:

- Waste Water Recovery Tanks (2)
- Filter Pumps (2)
- Water Treating Filter (1)
- Filtered Water Storage Tank (1)
- Portable Demineralizer System (Ecolochem Trailer)

The domestic water is pumped by one of the Filter Pumps from either the Filtered Water Storage Tank or the Waste Water Recovery Tanks through the Water Treating Filter to the Ecolochem Trailer. After processing through the Ecolochem Trailer, it is pumped to the Demineralized Water Storage Tanks.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for the Makeup Water Treatment System include NSR piping, fittings and valves in the vicinity of SR SSCs in the Control Building.

USAR Reference(s)

More information about the Makeup Water Treatment System can be found in the USAR Section 9.2.3.2

License Renewal Drawing(s)

Components requiring an AMR for the Makeup Water Treatment System are highlighted on the following drawings:

- LR-053, Sheet A, Revision 1, Control Building Chilled Water

Components Subject to an AMR

The component types requiring an AMR for the Makeup Water Treatment System and their intended functions are shown in Table 2.3.3.B.35-1. The AMR results for these components types are provided in Table 3.3.2.B-35.

Table 2.3.3.B.35-1
NMP2 Makeup Water Treatment System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.B.36 NMP2 RADIOACTIVE LIQUID WASTE MANAGEMENT SYSTEM

System Description

The NMP2 Radioactive Liquid Waste Management System is conceptually divided into four subsystems: the waste collector subsystem, the floor drain collector subsystem, the regenerant waste subsystem, and the phase separator subsystem.

The waste collection subsystem provides for collection, filtering, and demineralizing of generally low conductivity waste. Equipment sump pump discharge and low conductivity process waste water are routed to a Waste Collector Tank for initial storage and sampling.

The two Cleanup Phase Separator Tanks accept Reactor Water Cleanup filter/demineralizer backwashes. Reactor Water Phase Separator Pumps decant to the Waste Collector Tanks or the Spent Resin Tank. The remaining waste is normally transferred to a liner in the Radwaste truckbay, but may be transferred to the Spent Fuel Pool Phase Separator Tank.

The Spent Fuel Pool Phase Separator Tank accepts Spent Fuel Pool filter/demineralizer backwashes. Spent Fuel Pool Phase Separator Pump decants excess water to the Waste Collector Tanks or the Spent Resin Tank. The remaining waste is normally transferred to a liner in the Radwaste truckbay.

The two Regenerant Waste Tanks receive waste transferred from the Waste Neutralizer Tank at the Demineralizer Regeneration System or from the Radwaste Chemical sump. Regenerant Waste Pumps provide necessary head and flow for mixing, sampling, and processing to vendor supplied equipment (Thermex) or through spent resin.

The Floor Drain Collector System pumps provide necessary head and flow for mixing, sampling, or processing. Floor Drain System water is normally processed using vendor supplied equipment (Thermex).

The Spent Resin Tank accepts transfers from the Phase Separator Tanks, Filter Backwash Tank, Waste Sludge Tank, Thermex and Demineralizer Regeneration System. The tank is decanted by gravity drain to the Floor Drain Collector Tanks. The remaining waste is transferred to the Waste Sludge Tank for transfer to a liner using Solid Radwaste Procedures.

Components of the liquid radwaste system (LWS) located in the Reactor Building include the LWS Reactor Water Cleanup System phase separator tanks and pumps, the LWS spent fuel pool phase separator tank and pump, and various pipes and valves, including drain discharge piping. All other components are located in the Radwaste Building.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR in the Radioactive Liquid Waste Management System include NSR piping, fittings, valves, pumps, tanks, and restricting orifices associated with system piping starting at the drain tank inputs and continuing up to the Reactor Building.

USAR Reference(s)

More information about the Radioactive Liquid Waste Management System can be found in the USAR Section 11.2.1.

License Renewal Drawing(s)

Components requiring an AMR for the Radioactive Liquid Waste Management System are highlighted on the following drawings:

- LR-037, Sheet B, Revision 1, Reactor Water Cleanup
- LR-037, Sheet C, Revision 0, Reactor Water Cleanup

- LR-040, Sheet J, Revision 0, Radioactive Liquid Waste System

Components Subject to an AMR

The component types requiring an AMR for the Radioactive Liquid Waste Management System and their intended functions are shown in Table 2.3.3.B.36-1. The AMR results for these components types are provided in Table 3.3.2.B-36.

Table 2.3.3.B.36-1
NMP2 Radioactive Liquid Waste Management System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Filters	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Restricting Orifice	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.3.B.37 NMP2 ROOF DRAINAGE SYSTEM

System Description

The NMP2 Roof Drainage System is designed to collect water accumulation on building roofs and transport it to Lake Ontario. The system consists of roof drains, piping and fittings.

This system is in scope for license renewal for the following reasons:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to AMR include piping and fittings that provide drainage from roof structures in the Diesel Generator Building.

USAR Reference(s)

More Information about the Roof Drainage System can be found in

USAR Section 2.4.2.3.

License Renewal Drawing(s)

None (There are no License Renewal drawings showing these components.)

Components Subject to AMR

The component types requiring an AMR for the Roof Drainage System and their intended functions are shown in Table 2.3.3.B.37-1. The AMR results for these component types are provided in Table 3.3.2.B-37.

Table 2.3.3.B.37-1
NMP2 Roof Drainage System

Component Type	Intended Functions
Piping and Fittings	Leakage Boundary (Spatial)

2.3.3.B.38 NMP2 SANITARY DRAINS AND DISPOSAL SYSTEM

System Description

The NMP2 Sanitary Drains and Disposal System is designed to treat and dispose of the waste from all plumbing fixtures, except lavatories, sinks, and drains containing waste that is contaminated or potentially contaminated with chemicals or radioactivity. Such contaminated or potentially contaminated waste is physically segregated from the Sanitary Drains and Disposal System and is connected to the Floor and Equipment Drains Systems.

Non-contaminated sanitary waste from NMP2 flows by gravity to an underground wetwell (11,500-gallon storage capacity). The wetwell is located adjacent to a sewage lift station that is equipped with two sewage pumps to transport the waste to an on-site sanitary waste treatment facility. All non-contaminated waste lines are vented to the atmosphere.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR include NSR piping and fittings beginning in the Control Building and Auxiliary Service Building South and ending in the NMP2 Yard.

USAR Reference(s)

More information about the Sanitary Drains and Disposal System can be found in USAR Section 9.2.4.

License Renewal Drawing(s)

Components requiring an AMR for the Sanitary Drains and Disposal System are highlighted on the following drawings:

- LR-051, Sheet B, Revision 0, Sanitary Plumbing

Components Subject to an AMR

The components types requiring an AMR for the Sanitary Drains and Disposal System and their intended functions are shown in the Table 2.3.3.B.38-1. The AMR results for these components types are provided in Table 3.3.2.B-38.

Table 2.3.3.B.38-1
NMP2 Sanitary Drains and Disposal System

Component Type	Intended Functions
Piping and Fittings	Leakage Boundary (Spatial)

2.3.3.B.39 SERVICE WATER CHEMICAL TREATMENT SYSTEM

System Description

The NMP2 Service Water Chemical Treatment System provides biocides and detoxification to the Service Water System to control microbiologically influenced corrosion (MIC). The biocides (Sodium Hypochlorite and Sodium Bromide) are dripped into the Service Water Intake Bay and the detoxification agent (Sodium Bisulfite) is introduced into the two 30 inch return lines.

The chemicals are stored in the refurbished Acid and Hypochlorite tanks. The chemicals are delivered by 6 skid mounted dosing pumps: Two Sodium Bisulfite Pumps, two Sodium Hypochlorite Pumps, and two Sodium Bromide Pumps.

Demineralized carrier water is supplied from the Makeup Water System and is used to deliver chemicals from the dosing pumps to the appropriate delivery point.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject of an AMR for this system include the NSR piping and fittings, and valves starting at valve 2SCT-V9 and ending at the Service Water System suction lines.

USAR Reference(s)

More information about the Service Water Chemical Treatment System can be found in the USAR Section 9.2-4

License Renewal Drawing(s)

Components requiring an AMR for the Service Water Chemical Treatment System are highlighted on the following drawings:

- LR-011, Sheet H, Revision 1, Service Water System
- LR-111, Sheet A, Revision 0, Service Water Chemical Treatment System

Components Subject to an AMR

The component types requiring an AMR for the Service Water Chemical Treatment System and their intended functions are shown in Table 2.3.3.B.39 -1. The AMR results for these component types are provided in Table 3.3.2.B-39.

Table 2.3.3.B.39-1
NMP2 Service Water Chemical Treatment System

Component Type	Intended Functions
Bolting	Structural Integrity (Attached) Leakage Boundary (Spatial)
Piping and Fittings	Structural Integrity (Attached) Leakage Boundary (Spatial)
Valves	Structural Integrity (Attached) Leakage Boundary (Spatial)

2.3.3.B.40 NMP2 TURBINE BUILDING CLOSED LOOP COOLING WATER SYSTEM

System Description

The NMP2 Turbine Building Closed Loop Cooling Water (TBCLCW) System is a demineralized water, closed-cycle heat transfer system that consists of three 50-percent capacity pumps and heat exchangers, along with appropriate controls and instrumentation to ensure adequate cooling capacity for the Turbine Building and Radwaste Building auxiliary systems and components during normal plant operation. Heat removed from components by the TBCLCW System is transferred to the Service Water System.

The TBCLCW system consists of a single loop with three 450-hp, 50-percent system capacity, motor-driven centrifugal pumps in parallel (one in standby) feeding three half-capacity component cooling water heat exchangers also arranged in parallel (one in standby). The TBCLCW flowing in the shell of the heat exchangers is cooled by service water at the maximum expected temperature of 82°F entering and approximately 90°F leaving the tubes.

A surge and makeup tank accommodates system volume changes due to temperature variations, maintains static head on the pumps, and allows detection of gross leaks in the system. It also provides for normal leakage in the system. Makeup water to the surge tank is provided by the Makeup Water System (Section 2.3.3.B.18).

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for the TBCLCW System include NSR piping and fittings, valves, and a sample cooler on the piping line between valves 2CCP-V914 and V 915.

USAR Reference(s)

More information about the TBCLCW System can be found in USAR Section 9.2.7.

License Renewal Drawing(s)

Components requiring an AMR for the TBCLCW System are highlighted on the following drawings:

- LR-014, Sheet E, Revision 0, Turbine Building Closed Loop Cooling
- LR-017, Sheet B, Revision 0, Turbine Plant Sampling

Components Subject to an AMR

The component types requiring an AMR in the TBCLCW System and their intended functions are shown in Table 2.3.3.B.40-1. The AMR results for these components types are provided in Table 3.3.2.B-40.

Table 2.3.3.B.40-1
NMP2 Turbine Building Closed Loop Cooling

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Sample Cooler	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4 STEAM AND POWER CONVERSION SYSTEMS

The NMP1 and NMP2 Steam and Power Conversion Systems are described in Sections 2.3.4.A and 2.3.4.B, respectively.

2.3.4.A NMP1 STEAM AND POWER CONVERSION SYSTEMS

The NMP1 Steam and Power Conversion Systems transfer steam from the reactor, convert it to the plant's electrical output, and return water to the Reactor Pressure Vessel (RPV). The following systems are included in this subsection.

- NMP1 Condensate and Condensate Transfer System (Section 2.3.4.A.1)
- NMP1 Condenser Air Removal and Off-Gas System (Section 2.3.4.A.2)
- NMP1 Feedwater/High Pressure Coolant Injection System (Section 2.3.4.A.3)
- NMP1 Main Generator and Auxiliary System (Section 2.3.4.A.4)
- NMP1 Main Steam System (Section 2.3.4.A.5)
- NMP1 Main Turbine and Auxiliary System (Section 2.3.4.A.6)
- NMP1 Moisture Separator Reheater Steam System (Section 2.3.4.A.7)

2.3.4.A.1 NMP1 CONDENSATE AND CONDENSATE TRANSFER SYSTEM

System Description

The NMP1 Condensate System condenses steam exhausted from the low-pressure turbines and the turbine bypass valves. This condensate then becomes the primary water supply to the Feedwater/High Pressure Coolant Injection (FW/HPCI) System (Section 2.3.4.A.3). The main condenser also acts as a collecting basin for various leakage, drains, and relief valve discharges from balance of plant systems. The Condensate System also removes impurities from the condensed liquid for re-use as reactor water. The condensate serves as a cooling medium for the Off Gas System Steam Jet Air Ejector condensers, steam entering the condenser when the turbine bypass valves are open, and the turbine exhaust hood spray. Additionally, under emergency conditions such as a small break LOCA, the Condensate System supplies water from the main condenser to support the HPCI mode of operation to supply makeup water to the reactor.

The Condensate System consists of piping, valves, pumps, heat exchangers, controls, instrumentation, and associated equipment that supply condensate to the FW/HPCI System. The condensate pumps take suction from the condenser hotwell and discharge it through the Condensate Demineralizer System, the Steam Jet Air Ejector intercondenser, and the recombiner condensers into the FW booster pumps.

For license renewal purposes, the Condensate System also includes the Condensate Transfer System. The Condensate Transfer System supplies various systems and equipment throughout the plant with clean demineralized water. The Condensate Transfer System takes condensate from the Condensate Storage Tanks (CSTs), which are cross-connected, and delivers the water through one of two redundant pumps.

The Condensate and Condensate Transfer System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49) and station blackout (10 CFR 50.63).

The portion of the Condensate and Condensate Transfer System containing components subject to AMR begins at the main condenser and includes the main flowpath through the suction piping for the condensate pumps and the condensate pump discharge piping, ending at the boundary of the Feedwater System. The condensate demineralizers and associated piping to, and from, the main condensate flowpath are also subject to AMR. Condensate Transfer piping supplying demineralized water to various systems is also subject to AMR. The components subject to an AMR for the Condensate System also include the NSR piping, fittings, and valves associated with the system drain lines and recirculation lines to the main condenser, main condenser level gauges, and condensate demineralizer recirculation piping, fittings, flow element, pump and valves. The components subject to an AMR for the Condensate Transfer System also include the NSR piping, fittings and valves to Reactor Water Cleanup System loads, Spent Fuel Pool Filtering and Cooling System loads, Condensate Storage Tanks, Condensate Demineralizers, and Ultrasonic Resin Cleaners. The piping and fittings downstream of valve 57-43 are also subject to AMR. .

USAR Reference(s)

More information about the Unit 1 Condensate and Condensate Transfer System can be found in USAR Section XI.B.License Renewal Drawings

Components requiring an AMR for the Condensate and Condensate Transfer System are highlighted on the following drawings:

- LR-18003-C, Revision 1, Condensate Flow
- LR-18006-C, Sheet 2, Revision 0, Drywell & Torus, Isolation & Blocking Valves
- LR-18008-C, Revision 1, Spent Fuel Storage Pool, Filtering and Cooling System
- LR-18009-C, Sheet 1, Revision 1, Reactor Clean-Up System
- LR-18009-C, Sheet 2, Revision 1, Reactor Clean-Up System
- LR-18010-C, Sheet 2, Revision 1, Off Gas System, Recombiner Section
- LR-18029-C, Revision 1, Condenser Connections, Condenser Spray & Water Box
- LR-18033-C, Sheet 1, Revision 1, Condensate Demineralizer System
- LR-18035-C, Revision 0, Resin Transfer Regeneration
- LR-18036-C, Revision 1, Sealing Water for Turbine Bldg., Waste Bldg., Reactor Bldg. & Screen House
- LR-18041-C, Sheet 1, Revision 1, Sampling Points, Main Steam, Feedwater & Condensate
- LR-18048-C, Revision 1, Condensate Transfer System, Pump Discharge
- LR-45136-C, Sheet 1, Revision 0, Instrumentation, Valve Schedule
- LR-45136-C, Sheet 3A, Revision 0, Instrumentation, Valve Schedule
- LR-45136-C, Sheet 4, Revision 0, Instrumentation Valve Schedule

- LR-69003-C, Sheet 2, Revision 0, Cond. Hotwell Lvl Turb. Bldg. El. 243'-0" Instr. Diagram

- LR-69003-C, Sheet 3, Revision 0, Cond. Hotwell Lvl (North) Turb. Bldg. El. 243'-0" Instr. Diagram

Components Subject to an AMR

The component types requiring an AMR for the Condensate and Condensate Transfer System and their intended functions are shown in Table 2.3.4.A.1-1. The AMR results for these component types are provided in Table 3.4.2.A-1.

Table 2.3.4.A.1-1
NMP1 Condensate and Condensate Transfer System

Component Type	Intended Functions
Bolting	Pressure Bounday Leakage Boundary (Spatial)
Condensate Demineralizers	Pressure Boundary
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary Leakage Boundary (Spatial)
Flow Gauges	Pressure Boundary
Flow Indicators	Pressure Boundary
Flow Orifices	Pressure Boundary
Level Observation Glasses	Leakage Boundary (Spatial)
Main Condenser	Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached) Pressure Boundary
Pumps	Leakage Boundary (Spatial) Pressure Boundary
Tanks	Pressure Boundary
Valves	Leakage Boundary (Spatial)
	Pressure Boundary

2.3.4.A.2 NMP1 CONDENSER AIR REMOVAL AND OFF-GAS SYSTEM

System Description

The NMP1 Condenser Air Removal and Off-Gas System remove non-condensable radioactive gases that accumulate in the main condenser during plant startup and normal operation. The gases evacuated by this system are mainly concentrated in the condenser, but steam, air, and other gases evacuated by the steam packing exhauster are also discharged to the Condenser Air Removal and Off-Gas System.

The Condenser Air Removal and Off-Gas System draws a suction from the air volume in the main condenser, processes the gases and exhausts the gases to the main stack. The processing of the non-condensable radioactive gases includes recombining the hydrogen and oxygen gases to form water, removing the moisture content of the gases and providing for radioactive decay so as to minimize the level of radiation exhausted to the main stack. This system also includes equipment to draw the initial vacuum on the main condenser during plant startup. The water removed by the processing of the condenser air is returned to the main condenser.

This system is in scope for license renewal for the following reason:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The SR components of the Condenser Air Removal and Off-Gas System are active and not subject to AMR. The components subject to AMR are the NSR piping, fittings, air ejectors, heat exchanger and valves from the Main Steam System to, and including, the steam jet air ejectors, mixing jet, and off gas preheater.

USAR Reference(s)

More information about the Unit 1 Condenser Air Removal and Off-Gas System can be found in USAR Section XI.B.3.

License Renewal Drawings

- Components requiring an AMR for the Condenser Air Removal and Off-Gs System are highlighted on the following drawings:LR-18010-C, Sheet 1, Revision 1, Main Condenser Air Removal and Off-Gas System

- LR-18010-C, Sheet 2, Revision 1, Off-Gas System Recombiner Section
- LR-18010-C, Sheet 4, Revision 0, Off-Gas System Pre-adsorbers and Charcoal Column and Vacuum Pump Section

Components Subject to an AMR

The component types requiring an AMR for the Condenser Air Removal and Off-Gas System and their intended functions are shown in Table 2.3.4.A.2-1. The AMR results for these component types are provided in Table 3.4.2.A-5.

Table 2.3.4.A.2-1
Condenser Air Removal and Off-Gas System

Component Type	Intended Function
Air Ejectors	Leakage Boundary (Spatial)
Bolting	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4.A.3 NMP1 FEEDWATER/HIGH PRESSURE COOLANT INJECTION SYSTEM

System Description

The NMP1 Feedwater/High Pressure Coolant Injection System (FW/HPCI) is the main source of processed water to the reactor during normal operation and also is designed to ensure that the core is adequately cooled under small break LOCA conditions, which do not result in a rapid depressurization of the RPV. The primary function of the FW System is to transfer the water from the Condensate System (Section 2.3.4.A.1) to the RPV. The FW System also preheats the feedwater prior to entering the RPV. The HPCI System is an operating mode of the FW system. The purpose of the HPCI System is to provide adequate cooling of the reactor core under abnormal and accident conditions, remove the heat from radioactive decay and residual heat from the reactor core at such a rate that fuel clad melting would be prevented, and provide for continuity of core cooling over the complete range of postulated break sizes in the primary system process barrier.

The FW System consists of three feedwater booster pumps, three trains of high and low pressure feedwater heaters, three feedwater pumps with associated flow control valves, two injection paths to the RPV which contain isolation valves and two feedwater spargers located within the RPV. The feedwater booster pumps take suction from the Condensate System

(Section 2.3.4.A.1). Minimum flow lines are connected to the discharge of each pump to provide pump protection. Extraction steam from the main turbine to the feedwater heaters are also part of the FW System. The diesel fire pump can be connected to the feedwater pump discharge header through a spool piece for Station Blackout and Appendix R fire scenarios. The Reactor Water Cleanup System (Section 2.3.3.A.19) discharge is connected to the feedwater injection lines between the inboard isolation valve and the RPV.

The HPCI System is an operating mode of the FW System. It utilizes the following components to fulfill its functions: the two condensate storage tanks, the main condenser hotwell, two condensate pumps, condensate demineralizers, two feedwater booster pumps, feedwater heaters, two motor-driven feedwater pumps, an integrated control system and associated piping and valves. Upon initiation, the HPCI System provides the control functions to deliver water from the condensate storage tanks to the RPV. However, the HPCI System is not an engineered safeguards system and is not considered in any LOCA analyses.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The portion of the FW/HPCI System containing components subject to AMR begins at the interface with the Condensate System piping, and includes the feedwater booster pump suction and discharge piping, tube side of the low pressure feedwater heaters, feedwater pump suction and discharge piping, tube side of the high pressure feedwater heaters, isolation valves and piping ending at the RPV. The components subject to an AMR for this system also include the NSR piping, fittings, and valves in the extraction steam and system vent, drain and recirculation lines.

USAR Reference(s)

More information about the FW/HPCI System can be found in USAR Sections VII.I and XI.B.

License Renewal Drawings

Components requiring an AMR for the FW/HPCI System are highlighted on the following drawings:

- LR-18002-C, Sheet 3, Revision 0, Steam Flow, Low Pressure Turbine and Low Pressure Heaters
- LR-18003-C, Revision 1, Condensate Flow
- LR-18004-C, Revision 1, Feed Water Flow, Low Pressure
- LR-18005-C, Sheet 1, Revision 0, Feed Water Flow, High Pressure
- LR-18005-C, Sheet 2, Revision 1, Feed Water Flow, High Pressure
- LR-18006-C, Sheet 1, Revision 1, Drywell & Torus, Isolation Valves
- LR-18023-C, Sheet 2, Revision 0, Motor Driven RFW Pump #11 & 12, Gear & Motor Oil
- LR-18024-C, Revision 1, Feedwater Heaters Misc., Vents and Drains
- LR-18041-C, Sheet 1, Revision 1, Sampling Points, Main Steam, Feedwater & Condensate
- LR-45136-C, Sheet 4, Revision 0, Instrumentation Valve Schedule
- LR-69005-C, Sheet 3, Revision 0, Instrument Diagram
- LR-69023-C, Sheet 1, Revision 0, RFW PMP #11 Lube oil pressure instrument diagram
- LR-69023-C, Sheet 2, Revision 0, RFW PMP #12 Lube oil pressure instrument diagram

Components Subject to an AMR

The component types requiring an AMR for the FW/HPCI System and their intended functions are shown in Table 2.3.4.A.3-1. The AMR results for these component types are provided in Table 3.4.2.A-2.

Table 2.3.4.A.3-1
NMP1 Feedwater/High Pressure Coolant Injection System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Feedwater Heaters	Pressure Boundary Leakage Boundary (Spatial) NSR Structural Support Structural Integrity (Attached)
Filters/Strainers	Pressure Boundary
Flow Elements	Pressure Boundary
Flow Indicators	Pressure Boundary
Flow Orifices	Pressure Boundary
Oil Coolers	Pressure Boundary
Piping and Fittings	Leakage Boundary (Spatial) Structural Integrity (Attached) Plateout/Holdup Pressure Boundary
Pumps	Pressure Boundary
Valves	Leakage Boundary (Spatial) Structural Integrity (Attached)Pressure Boundary

2.3.4.A.4 NMP1 MAIN GENERATOR AND AUXILIARY SYSTEM

System Description

The NMP1 Main Generator and Auxiliary System consists of the main generator, generator stator cooling water system, hydrogen seal oil system and hydrogen cooling system. The hydrogen cooling system fills the main generator with high-purity hydrogen gas to cool the generator during plant operation. The main generator is filled with hydrogen gas by first purging air with carbon dioxide and then purging the carbon dioxide with hydrogen.

The equipment used to supply carbon dioxide to the main generator is the only equipment of the Main Generator and Auxiliary System that is in scope for license renewal. This equipment consists of tanks, piping and valves.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

Components subject to AMR extend from the carbon dioxide storage tank, and include piping up to and including the hazard blocking valves, or in some cases, a nozzle just downstream of the hazard blocking valve.

USAR Reference(s)

More information about the Main Generator and Auxiliary System can be found in USAR Section XI.B.1.

License Renewal Drawings

Components requiring an AMR for the Main Generator and Auxiliary System are highlighted on the following drawings:

- LR-18039-C, Sheet 1, Revision 0, Generator, H2 and CO2 Systems
- LR-18039-C, Sheet 2, Revision 0, Cardox Fire Extinguishing System
- LR-18039-C, Sheet 3, Revision 0, Cardox Fire Extinguishing System

Components Subject to an AMR

The component types requiring an AMR for the Main Generator and Auxiliary System and their intended functions are shown in Table 2.3.4.A.4-1. The AMR results for these component types are provided in Table 3.4.2.A-3.

Table 2.3.4.A.4-1
NMP1 Main Generator and Auxiliary System

Component Type	Intended Functions
Bolting	Pressure Boundary
Piping and Fittings	Pressure Boundary
Tanks	Pressure Boundary
Valves	Pressure Boundary

2.3.4.A.5 NMP1 MAIN STEAM SYSTEM

System Description

The NMP1 Main Steam System supplies dry steam from the RPV to the main turbine and to various support systems. The Main Steam System consists of two main steam lines, four main steam isolation valves, six electromatic relief valves, four turbine stop valves, four turbine control valves, nine turbine bypass valves, controls, instrumentation, piping, valves and associated equipment. The system extends from the RPV main steam nozzles to the turbine stop, control and bypass valves and to the inlet of the various components it supplies steam to. The discharge piping and valves from the electromatic relief valves to the torus, including the Y-quenchers, are also included within this system. The electromatic relief valves are also used by the Automatic Depressurization System (Section 2.3.2.A.1) to depressurize the RPV during accident conditions.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The portion of the Main Steam System containing components subject to AMR begins immediately downstream of the RPV main steam outlet nozzles and includes piping downstream to, and including, the MSIVs. Branch connection piping from the main steam lines through the Electromatic Relief Valves (ERVs) to the torus is also subject to AMR. Additionally, instrumentation piping connected to the main steam piping inside primary containment and an instrument line connected to the high pressure turbine, are subject to AMR. The instrumentation line components subject to AMR end at blocking valves separating the instrumentation piping from the Reactor Building equipment drain tank piping or Turbine Building equipment drain tank piping. The components subject to an AMR for this system also include the NSR piping, fittings, and valves from the MSIVs to the turbine stop and control valves manifold, turbine by-pass control valves manifold, steam seal regulator, electrical and mechanical pressure regulators, and vent, drain and sample lines.

USAR Reference(s)

More information about the Unit 1 Main Steam System can be found in USAR Sections V.B.1, V.B.5, and XI.B.1.

License Renewal Drawings

Components requiring an AMR for the Main Steam System are highlighted on the following drawings:

- LR-18002-C, Sheet 1, Revision 1, Steam Flow, Main Steam & High Press. Turbine
- LR-18017-C, Sheet 1, Revision 1, Emergency Cooling System
- LR-18045-C, Sheet 7, Revision 1, Waste Disposal System
- LR-69002-C, Sheet 1, Revision 0, Main Steam Flow Instrumentation, North Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69002-C, Sheet 2, Revision 0, Main Steam Flow Instrumentation, North Instrument Room R.B. El. 237'-0", Instrument Diagram
- LR-69002-C, Sheet 3, Revision 0, Turbine First Stage Steam Press Turbine Building El. 277'-0" & 250'-0" Instrument Diagram

Components Subject to an AMR

The component types requiring an AMR for the Main Steam System and their intended functions are shown in Table 2.3.4.A.5-1. This also includes component types requiring an AMR for the Automatic Depressurization System. The AMR results for these component types are provided in Table 3.4.2.A-4.

Table 2.3.4.A.5-1
NMP1 Main Steam System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Condensing Pots	Pressure Boundary
Flow Elements	Plateout/Holdup Pressure Boundary

Component Type	Intended Functions
Piping and Fittings	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Regulator	Leakage Boundary (Spatial)
Valves	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Y-quenchers	Pressure Boundary

2.3.4.A.6 NMP1 MAIN TURBINE AND AUXILIARY SYSTEMS

System Description

The NMP1 Main Turbine and Auxiliary Systems converts the thermal energy contained in the steam supplied by the reactor into electrical energy. The turbine is a tandem-compound, 1800 RPM unit with a single admission, double-flow high pressure section and a six-flow low pressure section. Reactor steam is directly admitted to the high pressure turbine through four sets of main stop and control valves. After expansion through the high pressure turbine, steam flows to four moisture separators and four reheaters where it is reheated. The heat for this process is provided by reactor steam tapped from the below seat side of the stop valves and high pressure extraction steam. From the reheaters, the steam returns to the turbine by passing through six sets of combined valves (intercept and reheat stop valves combined into one assembly). After expansion through the low pressure section, steam is discharged into the condenser. A bypass system is provided which allows bypassing excess steam flow to the condenser when the turbine cannot absorb all the generated steam.

The NMP1 Main Turbine and Auxiliary Systems consist of multiple subsystems including the Main Turbine System, Turbine-Generator Controls System, Turbine Gland Sealing System, Turbine Oil Storage and Purification System, Turbine Protection System and Turbine Supervisory Instruments System. Of these systems, the Turbine Gland Sealing System, Turbine Oil Storage and Purification System and the Turbine Protection System, specifically the Turbine Overspeed System, contain components that are WSLR.

The Turbine Gland Sealing System functions to seal the shaft of the main turbine against leakage of steam from the turbine shell to atmosphere as well as leakage of air from atmosphere to the main condenser. Steam from the Main Steam System enters the Steam Seal Regulator, is distributed to the turbine shaft seals and is discharged to the Steam Packing Exhausters. This system consists of NSR piping, fittings, valves, steam seal regulator and the shell side of the steam packing exhausters.

The Turbine Oil Storage and Purification System supplies purified lubricating and cooling oil to the turbine-generator bearings, shaft-driven feedwater pump and the Turbine-Generator Controls System. Provisions are also included for purification, storage and transfer of high quality oil. The system is a closed system consisting of NSR storage tanks, pumps, filters, piping, fittings and valves.

The Turbine Protection System monitors selected parameters, including turbine overspeed, and provides various trips and alarms designed to protect the turbine from damage. Turbine overspeed protection is performed primarily by the emergency governor but also has a backup trip from the main speed governor. As the overspeed setpoint is reached, an eccentric ring will move far enough off center to strike the trip finger on the emergency trip device. The subsequent overspeed trip results in the loss of hydraulic fluid pressure and closure of the turbine steam valves. The turbine overspeed trip reliability is an input to the turbine missile probability analysis that demonstrates the adequacy of plant design. Therefore, the scope of license renewal conservatively includes the SCs that perform this function.

The Main Turbine and Auxiliary Systems are in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The Turbine Gland Sealing System components subject to AMR include the NSR piping and fittings, heat exchangers, valves, and regulator. The Turbine Oil Storage and Purification System components subject to AMR include the NSR piping, fittings and valves in the drain lines from the Lube Oil Storage Tanks, Waste Oil Receiver and Portable Centrifuge. A review of the Turbine Protection System, specifically the Turbine Overspeed System, indicated that the overspeed trip function is performed by active components. A failure of a passive component associated with the Turbine Overspeed System (loss of pressure boundary and subsequent loss of hydraulic fluid) would initiate a turbine trip and not prevent the performance of the system intended function. Accordingly, the passive components associated with the Turbine Overspeed System are not subject to an AMR.

<u>USAR Reference(s)</u>

More information about the Main Turbine and Auxiliary Systems can be found in USAR Sections XI.B.1 and VIII.B.2.3.

License Renewal Drawings

Compnents requiring an AMR for the Main Turbine and Auxiliary Systems are highlighted on the following drawings:

- LR-18025-C, Revision 0, Turbine Steam Seals and Turbine Drains

- LR-18037-C, Revision 0, Turbine Lube Oil and Purification

Components Subject to an AMR

The component types requiring an AMR for the Main Turbine and Auxiliary Systems and their intended functions are shown on Table 2.3.4.A.6-1. The AMR results for these component types are provided in Table 3.4.2.A-6.

Table 2.3.4.A.6-1
NMP1 Main Turbine and Auxiliary Systems

Component Type	Intended Functions
Bolting	Leakage boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and fittings	Leakage Boundary (Spatial)
Regulator	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4.A.7 NMP1 MOISTURE SEPARATOR REHEATER STEAM SYSTEM

System Description

The NMP1 Moisture Separator Reheater Steam System removes entrained moisture from the high pressure turbine exhaust and reheats the dried steam to superheated conditions before it passes on to the low pressure turbine. The system consists of four moisture separators, four reheaters, associated drain tanks, piping, fittings, valves, and instruments and controls. The system extends from the high pressure turbine exhaust lines, through the moisture separators and reheaters to the low pressure turbine inlet lines. The system also extends from the moisture separators and reheaters through their associated drain tanks to the fifth point feedwater heaters or to the main condenser.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to AMR for this system include the moisture separators, reheaters, drain tanks, piping, fittings, flow element, flow restricting orifice, heat exchanger, separator, strainer and valves.

USAR Reference(s)

More information about the Moisture Separator Reheater Steam System can be found in USAR Section XI.B.1.0.

License Renewal Drawing(s)

Components requiring an AMR for the Moisture Separator Reheater Steam System are highlighted on the following drawing:

- LR-18002-C, Sheet 2, Revision 0, Steam Flow, Reheat Steam and High Pressure Heaters

Components Subject to AMR

Components requiring an AMR for the Moisture Separator Reheater Steam System and their intended functions are shown in Table 2.3.4.A.7-1. The AMR results for these component types are provided in Table 3.4.2.A-7.

Table 2.3.4.A.7-1
Moisture Separator Reheater Steam System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Flow Element	Leakage Boundary (Spatial)
Flow Orifices	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and fittings	Leakage Boundary (Spatial)
Separator	Leakage Boundary (Spatial)
Strainer	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4.B NMP2 STEAM AND POWER CONVERSION SYSTEMS

The NMP2 Steam and Power Conversion Systems transfer steam from the reactor, convert it to the plant's electrical output, and return water to the RPV. The following systems are included in this subsection.

- NMP2 Main Condenser Air Removal System (Section 2.3.4.B.1)

- NMP2 Condensate System (Section 2.3.4.B.2)
- NMP2 Feedwater System (Section 2.3.4.B.3)
- NMP2 Main Steam System (Section 2.3.4.B.4)
- NMP2 Moisture Separator and Reheater System (Section 2.3.4.B.5)
- NMP2 Extraction Steam and Feedwater Heater Drain System (Section 2.3.4.B.6)
- NMP2 Turbine Main System (Section 2.3.4.B.7)

2.3.4.B.1 NMP2 MAIN CONDENSER AIR REMOVAL SYSTEM

System Description

The purpose of the NMP2 Main Condenser Air Removal System is to establish and maintain a main condenser vacuum by removing air and non-condensable gases from the main condenser. This system consists of two subsystems. The Hogging subsystem is used to establish condenser vacuum during plant startup. The Holding subsystem is used to maintain condenser vacuum during normal plant operations. The Hogging subsystem consists of vacuum pumps, seal water cooler, piping, valves, and instrumentation. The Holding subsystem consists of two trains. Each train consists of a precooler, Steam Jet Air Ejectors, an intercondenser, piping, valves, and instrumentation.

The Main Condenser Air Removal System is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for this system include the NSR inter-condensers, steam jet air ejectors and associated piping, fittings and valves containing steam. The NSR components containing a liquid in the Turbine Building are not in-scope of license renewal since they are in low/moderate energy portions of the system and not in the vicinity of SR SSCs. USAR Reference(s)

More information about the Unit 2 Main Condenser Air Removal System can be found in USAR Section 10.4.2.

License Renewal Drawing(s)

- Components subject to an AMR for the Main Condenser Air Removal System are highlighted on the following drawing: LR-009, Sheet A, Revision 0, Condenser Air Removal System

Components Subject to an AMR

Components requiring an AMR for the Main Condenser Air Removal System and their intended functions are shown in Table 2.3.4.B.1-1. The AMR results for these component types are provided in Table 3.4.2.B-1.

Table 2.3.4.B.1-1
NMP2 Main Condenser Air Removal System

Component Type	Intended Functions
Air Ejectors	Leakage Boundary (Spatial)
Bolting	Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and fittings	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4.B.2 NMP2 CONDENSATE SYSTEM

System Description

The NMP2 Condensate System provides a reliable supply of condensate to the feedwater system. The Condensate System consists of the main condenser, three condensate pumps, three condensate booster pumps, three trains of drain coolers and low pressure heaters, controls, instrumentation, piping, valves and associated equipment to supply the Feedwater System with heated, high quality condensate. The system extends from the main condenser to the low pressure heaters discharge header and includes flow through the condensate demineralizers, steam jet air ejector intercondensers and turbine glad steam exhausters.

For license renewal purposes the Condensate System also includes the following systems: Condensate Makeup and Drawoff System, Condensate Demineralizer System, Condensate Demineralizer System – Mixed Bed System, Condensate Booster Pump Lube Oil System, and Auxiliary Condensate System. Further information on these systems is provided below.

The Condensate Makeup and Drawoff System provides makeup water to various systems in the plant, serves as a source of water during refueling operations, serves as reserve for the Reactor Core Isolation Cooling System (Section 2.3.2.B.6) and the High-Pressure Core Spray System (Section 2.3.2.B.3), and provides for condenser hotwell level control. The Condensate Demineralizer System and Condensate Demineralizer System – Mixed Bed System are designed to maintain reactor feedwater purity by the removal of soluble and insoluble impurities from the condensate. They also provide a means of cleaning the condensate resins. The Condensate Booster Pump Lube Oil System provides lubricating oil to the condensate booster pump seals. The Auxiliary Condensate System provides level controls and condensate removal functions for systems, structures, and components that are supplied with auxiliary steam.

The Condensate System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The portions of the Condensate System containing components subject to AMR include the CSTs, piping and expansion joints connected to the CST up to and including the first outboard valve, piping from the main condensers to pressure transmitters, and one check valve. The components subject to an AMR for the Condensate System also include the NSR pumps and heat exchangers and associated flow elements, piping and fittings and valves from the condensate booster pumps through the feedwater heaters to the suction of the feedwater pumps. The main condenser is also subject to AMR. The entire mechanical portion of the Auxiliary Condensate System is subject to AMR and includes the NSR reboiler drain tanks and associated restriction orifices, piping and fittings and valves to the 3rd point feedwater heaters and discharge lines to the main condenser. The components subject to AMR for the Condensate Makeup and Drawoff System include the NSR piping, fittings and valves in the Pipe Tunnel and NSR flow elements, piping, fittings and valves in the Reactor Building which supplies water to various system loads..

USAR Reference(s)

More information about the Unit 2 Condensate System can be found in USAR Sections 9.2.6, 10.4.1, 10.4.6, and 10.4.7.

License Renewal Drawings

Components requiring an AMR for the Condensate System are highlighted on the following drawings:

- LR-003, Sheet A, Revision 1, Condensate System
- LR-003, Sheet B, Revision 0, Condensate System
- LR-003, Sheet C, Revision 0, Condensate System
- LR-003, Sheet D, Revision 0, Condensate System
- LR-004, Sheet A, Revision 1, Condensate Storage and Transfer
- LR-004, Sheet B, Revision 1, Condensate Makeup and Transfer
- LR-009, Sheet A, Revision 0, Condenser Air Removal System
- LR-025, Sheet A, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet B, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet C, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet D, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet F, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet G, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-033, Sheet B, Revision 1, High Pressure Core Spray System
- LR-035, Sheet D, Revision 1, Reactor Core Isolation Cooling

Components Subject to an AMR

The component types requiring an AMR for the Condensate System and their intended functions are shown in Table 2.3.4.B.2-1. The AMR results for these component types are provided in Table 3.4.2.B-2.

Table 2.3.4.B.2-1
NMP2 Condensate System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial)
Flow Element	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Main Condenser	Plateout/Holdup
Piping and Fittings	Pressure Boundary Leakage Boundary (Spatial)
Pump	Leakage Boundary (Spatial)
Restriction Orifice	Leakage Boundary (Spatial)
Tanks	Pressure Boundary Leakage Boundary (Spatial)
Valves	Pressure Boundary Leakage Boundary (Spatial)

2.3.4.B.3 NMP2 FEEDWATER SYSTEM

System Description

The NMP2 Feedwater (FW) System provides a reliable supply of feedwater to the reactor at the temperature, pressure, quality, and flow rate required by the reactor. The FW System consists of three feedwater pumps, three sixth point feedwater heaters, controls, instrumentation, piping, valves, and associated equipment to supply the reactor with heated, high quality feedwater. The system extends from the low pressure heater strings discharge header to the RPV feedwater inlet penetrations. Connections from the zinc injection passivation system are provided on both the suction and discharge to the feedwater pumps. The Reactor Water Cleanup System (Section 2.3.3.B.25) also connects to the FW System between the feedwater heaters and system isolation valves.

For license renewal purposes the FW System also includes the following systems: Feedwater Pump Seals and Leakoff System, Feedwater Pump

Recirculation Balance Drum Leakoff System, and Feedwater Pump Drive Lube Oil System. Further information on these systems is provided below.

The Feedwater Pump Seals and Leakoff System provides seal water to the pump mechanical seals from the condensate booster pump discharge. The seal water minimizes pump mechanical seal leakage and cools the pump seals to minimize seal degradation. The Feedwater Pump Recirculation Balance Drum Leakoff System provides minimum flow protection for each feedwater pump via a recirculation line to the main condenser. The Feedwater Pump Drive Lube Oil System provides lube oil to the reactor feed pumps.

The FW System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49) and anticipated transients without scram (10 CFR 50.62).

The portion of the FW System containing components subject to AMR begins at the motor-operated containment isolation valves, and includes piping downstream to the reactor vessel feedwater nozzles. Branch connection piping for the return of water from the Reactor Water Cleanup System (Section 2.3.3.B.25) is also subject to AMR. The entire NSR mechanical portion of the Feedwater System is also subject to AMR from the feedwater pumps through the 6^{th} point feedwater heaters up to the SR isolation valves. This portion of the Feedwater System includes flow elements, heat exchangers, piping and fittings, pumps, restriction orifices and valves. The entire NSR mechanical portion of the Feedwater Pump Seals and Leakoff System is also subject to AMR from the Condensate System supply to the feedwater pumps to the discharge to the equipment drains. This portion of the system includes flow elements, piping and fittings, strainers and valves. The entire NSR mechanical portion of the Feedwater Pump Recirculation Balance Drum Leakoff System is also subject to AMR from the intertie with the feedwater pump discharge line to the main condenser and includes piping and fittings, restriction orifices and valves.USAR Reference(s)

More information about the FW System can be found in USAR Section 10.4.7.

License Renewal Drawings

Components requiring an AMR for the FW System are highlighted on the following drawings:

- LR-006, Sheet A, Revision 1, Feedwater System
- LR-006, Sheet B, Revision 1, Feedwater System
- LR-006, Sheet C, Revision 0, Feedwater System
- LR-037, Sheet B, Revision 1, Reactor Water Cleanup System

Components Subject to an AMR

The component types requiring an AMR for the FW System and their intended functions are shown in Table 2.3.4.B.3-1. The AMR results for these component types are provided in Table 3.4.2.B-3.

Table 2.3.4.B.3-1
NMP2 Feedwater System

Component Type	Intended Functions
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Flow Element	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and Fittings	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Pump	Leakage Boundary (Spatial)
Restriction Orifice	Leakage Boundary (Spatial)
Strainer	Leakage Boundary (Spatial)

Component Type	Intended Functions
Valves	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.4.B.4 NMP2 MAIN STEAM SYSTEM

System Description

The NMP2 Main Steam System provides high pressure steam from the RPV to the main turbine and the reheating side of the moisture separator/reheater. The Main Steam System also provides steam to the Reactor Core Isolation Cooling System (Section 2.3.2.B.6) for operation of its turbine-driven pump. The Main Steam System consists of four main steam lines, eight main steam isolation valves, eighteen safety relief valves, controls, instrumentation, piping, valves and associated equipment. The system extends from the RPV main steam nozzles to the inlet of the above stated loads, and from the safety relief valve discharge to the suppression pool. Seven of the safety relief valves are used by the Automatic Depressurization System (Section 2.3.2.B.1) to depressurize the RPV during accident conditions.

For license renewal purposes the Main Steam System also includes the Auxiliary Steam System and the Main Steam Safety Valves Vents and Drains System. Further information on these systems is provided below.

The Auxiliary Steam System provides reduced pressure steam to the steam jet air ejectors, offgas preheaters, clean steam reboiler, building heating intermediate heat exchanger, and is the backup steam supply for the turbine gland seal system. The Main Steam Safety Valves Vents and Drains System directs high pressure steam from the safety relief valves to the suppression pool.

The Main Steam System is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's

regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

The entire mechanical portions of the Main Steam System, including the Auxiliary Steam and Main Steam Safety Valves Vents and Drains Systems, are subject to AMR. Components in the Main Steam and Main Steam Safety Valves Vents and Drains Systems subject to AMR begin immediately outboard of the RPV Main Steam outlet nozzles, and ends at the outer MSIVs. Branch connection piping from the Main Steam lines to the main steam safety valves, discharging to the suppression pool, is subject to AMR along with its associated components. The components subject to an AMR for the Main Steam and Auxiliary Steam Systems also include the NSR flow elements, piping and fittings, restriction orifices, strainers, and valves from the outer MSIVs up to, and including, the turbine stop, control and bypass valves. .

USAR Reference(s)

More information about the Unit 2 Main Steam System can be found in USAR Sections 5.2.2, 5.4, and 10.3.

License Renewal Drawings

Components requiring an AMR for the Main Steam System are highlighted on the following drawings:

- LR-001, Sheet A, Revision 0, Main Steam
- LR-001, Sheet B, Revision 0, Main Steam
- LR-001, Sheet C, Revision 0, Main Steam
- LR-001, Sheet D, Revision 0, Main Steam
- LR-001, Sheet E, Revision 1, Main Steam
- LR-001, Sheet F, Revision 1, Main Steam
- LR-001, Sheet G, Revision 0, Main Steam
- LR-001, Sheet H, Revision 0, Main Steam
- LR-001, Sheet J, Revision 0, Main Steam

- LR-001, Sheet K, Revision 0, Main Steam

Components Subject to an AMR

The component types requiring an AMR for the Main Steam System and their intended functions are shown in Table 2.3.4.B.4-1. This also includes components requiring an AMR for the Automatic Depressurization System. The AMR results for these component types are provided in Table 3.4.2.B-4.

Table 2.3.4.B.4-1
NMP2 Main Steam System

Component Type	Intended Functions
"T" Quenchers	Pressure Boundary
Bolting	Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Condensing Chambers	Pressure Boundary
Flexible Hose	Pressure Boundary
Flow Elements	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial)
Piping and Fittings	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)
Restriction Orifices	Throttle Pressure Boundary Leakage Boundary (Spatial)
Strainers	Leakage Boundary (Spatial)
Valves	Plateout/Holdup Pressure Boundary Leakage Boundary (Spatial) Structural Integrity (Attached)

2.3.4.B.5 NMP2 MOISTURE SEPARATOR AND REHEATER SYSTEM

System Description

The NMP2 Moisture Separator and Reheater System removes entrained moisture from the high pressure turbine exhaust and reheats the dried steam to superheated conditions before it passes on to the low pressure turbine. The Moisture Separator and Reheater System consists of two moisture separator reheaters, two reheater drain tanks, controls, instrumentation, piping, valves and associated equipment. The system extends from the high pressure turbine exhaust lines, through the moisture separator reheaters, to the low pressure turbine inlet lines, and forth-point feedwater heaters and from the main steam equaling header, through the moisture separator reheaters and reheater drain tanks, to the drain lines to the main condenser and high pressure feedwater heaters.

The Moisture Separator and Reheater System, as described above, encompasses the Cold Reheat Steam, Hot Reheat Steam, Moisture Separator and Reheater Vents, and Moisture Separator Vents and Drains Systems.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The entire mechanical portions of the Moisture Separator and Reheater System are subject to AMR. The components subject to an AMR include the NSR heat exchangers, piping and fittings, restriction orifices, strainers, tanks and valves..

USAR Reference(s)

More information about the Unit 2 Moisture Separator and Reheater System can be found in USAR Sections 10.1 and 10.2.2.1.

License Renewal Drawing(s)

Components requiring an AMR for the Moisture Separator and Reheater System are highlighted on the following drawings:

- LR-002, Sheet A, Revision 0, Moisture Separators and Reheaters
- LR-002, Sheet B, Revision 0, Moisture Separators and Reheaters
- LR-002, Sheet C, Revision 0, Moisture Separators and Reheaters
- LR-002, Sheet D, Revision 0, Moisture Separators and Reheaters

Components Subject to an AMR

Components requiring an AMR for the Moisture Separator and Reheater System and their intended functions are shown in Table 2.3.4.B.5-1. The AMR results for these component types are provided in Table 3.4.2.B-5.

Table 2.3.4.B.5-1
NMP2 Moisture Separator and Reheater System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and fittings	Leakage Boundary (Spatial)
Restriction Orifice	Leakage Boundary (Spatial)
Strainer	Leakage Boundary (Spatial)
Tank	Leakage Boundary (Spatial)
Valve	Leakage Boundary (Spatial)

2.3.4.B.6 NMP2 EXTRACTION STEAM AND FEEDWATER HEATER DRAIN SYSTEM

System Description

The Extraction Steam and Feedwater Heater Drain System is designed to heat the reactor feedwater to meet reactor inlet requirements. The system also provides heating steam to the building heating intermediate heat exchangers and clean steam reboilers. The system consists of the piping and fittings, valves, heat exchangers, pumps, drain receivers, controls, instrumentation, and associated equipment required to heat the reactor feedwater and remove the feedwater from the heater drains.

The low-pressure section of the system consists of three independent strings of feedwater heaters, each containing two drain coolers and five closed feedwater heaters. The high-pressure section consists of three strings each with one closed feedwater heater.

The sixth-point high-pressure feedwater heaters receive fourth-stage extraction steam, reheater drains, and reheater scavenging steam. They drain to the fifth-point heaters.

The fifth-point heaters receive extraction steam from the high-pressure turbine exhaust (cold reheat) and sixth-point heater drains and drain to the fourth-point feedwater heaters.

The fourth-point feedwater heaters receive eighth-stage extraction steam from the low-pressure turbine, moisture separator drains, and cascaded fifth-point heater drains. The drains from the fourth-point feedwater heaters are pumped forward by the heater drain pumps into the condensate system upstream of the fifth-point feedwater heaters.

The third-point feedwater heaters receive extraction steam from the ninth stage of the low-pressure turbine, drains from the clean steam reboiler, and high-pressure turbine gland seal leakoff steam. The drains flow through separate drain coolers to the condenser.

The second-point feedwater heaters, located in the condenser neck, receive extraction steam from the eleventh stage of the low-pressure turbine. The drains from each heater collect in a drain receiver and drain through separate coolers to the condenser.

The first-point feedwater heaters, also located in the condenser neck, receive extraction steam and moisture removal stage drips from the thirteenth stage of the low-pressure turbine. The first-point heaters drain directly to the condenser through a loop seal.

This system is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The entire mechanical portion of the Extraction Steam and Feedwater Heater Drain System is subject to AMR commencing with the interfaces with the Main Turbine and Moisture Separator and Reheater Systems and ending at the first-point feedwater heaters. The components subject to AMR for this system include the NSR heat exchangers, piping and fittings, pumps, tanks and valves.

USAR Reference(s)

More information about the NMP2 Extraction Steam and Feedwater Heater Drain System can be found in the USAR Section 10.4.10.

License Renewal Drawing(s)

Components requiring an AMR for the Extraction Steam and Feedwater Heater Drain System are highlighted on the following drawings:

- LR-008, Sheet A, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet B, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet C, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet D, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet E, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet F, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet G, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet H, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet J, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet K, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet L, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet M, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet N, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet P, Revision 0, Feedwater Heaters and Extraction Steam Systems
- LR-008, Sheet Q, Revision 0, Feedwater Heaters and Extraction Steam Systems

- LR-008, Sheet R, Revision 0, Feedwater Heaters and Extraction Steam Systems

- LR-008, Sheet S, Revision 0, Feedwater Heaters and Extraction Steam Systems

- LR-008, Sheet T, Revision 0, Feedwater Heaters and Extraction Steam Systems

- LR-008, Sheet U, Revision 0, Feedwater Heaters and Extraction Steam Systems

Components Subject to an AMR

The component types requiring an AMR for the NMP2 Extraction Steam and Feedwater Heater Drain System and their intended functions are shown in Table 2.3.4.B.6-1. The AMR results for these components types are provided in Table 3.4.2.B-6.

Table 2.3.4.B.6-1
NMP2 Extraction Steam and Feedwater Heater Drain System

Component Type	Intended Function
Bolting	Leakage Boundary (Spatial)
Heat Exchangers	Leakage Boundary (Spatial)
Piping and Fittings	Leakage Boundary (Spatial)
Pumps	Leakage Boundary (Spatial)
Tanks	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.3.4.B.7 NMP2 TURBINE MAIN SYSTEM

System Description

The NMP2 Turbine Main System converts the thermal energy contained in the steam from the reactor into electrical energy. The turbine is a tandem-compound, single-stage reheat unit with 38-inch last-stage, low-pressure buckets. It consists of a double-flow, high-pressure turbine and three double-flow, low-pressure turbines. Exhaust steam from the high-pressure turbine passes through a moisture separator/reheater before entering the three low-pressure turbines. The moisture separators mechanically remove the entrained moisture in the steam. The reheaters reheat the dried steam to a temperature near the initial steam temperature. The reheaters use high-pressure steam from the main steam lines as a heating medium and drain the condensed steam, along with some scavenging steam, to the highest pressure (sixth-point) feedwater heaters. The moisture separator drains are diverted to the fourth-point feedwater heaters. Additional steam for feedwater heating and auxiliary steam uses is supplied from the turbine extraction steam system.

The Turbine Main System consists of multiple subsystems including the Main Turbine System, Turbine Electric Hydraulic Oil and Controls System, Turbine Generator Gland Seal and Exhaust Steam System, Turbine Generator Lube Oil System, Turning Gear and Seal System, Turbine Generator Oil Conditioner and Storage System, Turbine Main Alarms and Trips System, Turbine Main Lube Oil System, Turbine Main Supervisory Instrumentation System, and the Turbine Plant Equipment Vents System.

Of these systems, the Turbine Generator Gland Seal and Exhaust Steam System and the Turbine Electric Hydraulic Oil and Controls System, specifically the Turbine Overspeed Trip System are in scope for license renewal. The turbine gland sealing system is designed to provide clean sealing steam for the turbine shaft and turbine steam control valves and to exhaust air that is drawn into the system to the stack. The sealing steam prevents steam leakage out through the high-pressure turbine shaft and turbine steam control valves (i.e., stop valves, control valves, bypass valves, and combined intermediate valves), and prevents air in-leakage through the low-pressure turbine shaft. The turbine generator has an Emergency Trip System which will close the main stop valves, control valves, and low-pressure turbine combined intermediate valves upon receipt of various protective signals, including a mechanical (110 percent) or electrical (112 percent) overspeed trip signal. These setpoints prevent the turbine rotor from exceeding the maximum transient speed of 120 percent (design overspeed) of rated turbine speed.

The Turbine Main System is in scope for license renewal for the following reason:

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to AMR for the Turbine Generator Gland Seal and Exhaust Steam System are from the supply from the Auxiliary Steam System through the clean steam reboilers to the turbine shaft and valves to the steam packing exhausters and discharge to the main condenser. This system includes the NSR heat exchangers, piping and fittings, restriction orifice, tank and valves. A review of the Turbine Electric Hydraulic Oil and Controls System, specifically the Turbine Overspeed Trip System, indicated that the trip function is performed by active components. A failure of a passive component associated with the Turbine Overspeed System (loss of pressure boundary and subsequent loss of hydraulic fluid) would initiate a turbine trip, not prevent the performance of the system intended function. Accordingly, the passive components associated with the Turbine Overspeed System are not subject to an AMR.

USAR Reference(s)

More information about the Unit 2 Turbine Main System can be found in USAR Section 10.

License Renewal Drawings

Components requiring an AMR for the Turbine Main System are highlighted on the following drawings:

- LR-025, Sheet D, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet F, Revision 0, Clean Steam Reboiler and Auxiliary Cond.
- LR-025, Sheet G, Revision 0, Clean Steam Reboiler and Auxiliary Cond.

Components Subject to an AMR

The component types requiring an AMR for the Main Turbine System and their intended functions are shown in Table 2.3.4.B.7-1. The AMR results for these component types are provided in Table 3.4.2.B-7

Table 2.3.4.B.7-1
NMP2 Main Turbine System

Component Type	Intended Functions
Bolting	Leakage Boundary (Spatial)
Heat Exchanger	Leakage Boundary (Spatial)
Piping and fittings	Leakage Boundary (Spatial)
Restriction Orifice	Leakage Boundary (Spatial)
Tank	Leakage Boundary (Spatial)
Valves	Leakage Boundary (Spatial)

2.4 SCOPING AND SCREENING RESULTS: STRUCTURES AND COMPONENT SUPPORTS

The determination of structures and component supports within the scope of license renewal is made by initially identifying NMPNS structures and their design functions. Each structure is then reviewed to determine those that satisfy one or more of the criteria contained in 10 CFR 54.4. This process is described in Section 2.1 and the results of the structures review are included in Section 2.2. Section 2.1 also provides the methodology for determining the components within the scope of 10 CFR 54.4 that meet the requirements contained in 10 CFR 54.21(a)(1). The structures that meet these screening requirements are identified in this section. These identified structures require an aging management review for license renewal. The structures that are within scope are described in Sections 2.4.A and 2.4.B for NMP1 and NMP2, respectively. Additionally, structural commodities are described in Section 2.4.C. These commodities apply to both NMP1 and NMP2.

2.4.A NMP1 STRUCTURES

The following structures are included in this subsection.

- NMP1 Primary Containment Structure (Section 2.4.A.1)
- NMP1 Reactor Building (Section 2.4.A.2)
- NMP1 Essential Yard Structures (Section 2.4.A.3)
- NMP1 Fuel Handling System (Section 2.4.A.4)
- NMP1 Material Handling System (Section 2.4.A.5)
- NMP1 Offgas Building (Section 2.4.A.6)
- NMP1 Personnel/Equipment Access System (Section 2.4.A.7)
- NMP1 Radwaste Solidification and Storage Building (Section 2.4.A.8)
- NMP1 Screen and Pump House Building (Section 2.4.A.9)
- NMP1 Turbine Building (Section 2.4.A.10)
- NMP1 Vent Stack (Section 2.4.A.11)
- NMP1 Waste Disposal Building (Section 2.4.A.12)

2.4.A.1 NMP1 PRIMARY CONTAINMENT STRUCTURE

Description

The NMP1 Primary Containment Structure (PCS) is a seismic Class I structure. The primary containment is a Mark I design that consists of a drywell, a suppression chamber in the shape of a torus, and a connecting vent system between the drywell and the suppression chamber. It also includes valves and piping associated with the vacuum breaker system and the structural portions of primary containment penetrations. The drywell is a steel pressure vessel in the shape of an inverted light bulb. The drywell is enclosed in reinforced concrete for shielding purposes. The stiffened pressure suppression chamber is a steel pressure vessel in the shape of a torus located below and encircling the drywell. The PCS is part of a multibarrier system with a primary barrier consisting of the primary containment with its pressure suppression system and a secondary barrier consisting of the Reactor Building (RB) (Section 2.4.A.2). The PCS contains the released steam in the event of the design basis LOCA to limit the release to the RB of fission products associated with this accident. The PCS is an enclosure for the RPV, the Reactor Recirculation system, and other branch connections of the reactor coolant pressure boundary.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The entire PCS is made up of components that require an AMR.

USAR Reference(s)

More information about the PCS can be found in USAR Sections VI.A and VI.B.

License Renewal Drawings

- LR-18006-C, Sheet 2, Revision 0, Drywell and Torus Isolation and Block Valves
- LR-45136-C, Sheet 8, Revision 0, Instrumentation Valve Schedule

Components Subject to an AMR

The component types requiring an AMR for the PCS and their intended functions are shown in Table 2.4.A.1-1. The AMR results for these component types are provided in Table 3.5.2.A-1.

Table 2.4.A.1-1
NMP1 Primary Containment Structure

Component	Component Type in Table 3.5.2.A-1	Intended Functions
Beam Seats	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Bearing Plates	Copper Alloy (Zinc < 15%) in Air	Structural Support
Concrete & Grout	Concrete in Air	Structural Support
Containment Penetrations (Electrical)	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Support Structural Pressure Barrier
Containment Penetrations (Instrument)	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Support Structural Pressure Barrier
	Structural Steel (Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Pressure Boundary Structural Support Structural Pressure Barrier
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Structural Support Structural Pressure Barrier
Containment Penetrations (Mechanical)	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Support Structural Pressure Barrier
	Structural Steel (Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Pressure Boundary Structural Support Structural Pressure Barrier
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Structural Support Structural Pressure Barrier
Downcomer Tie Straps	Fasteners (High Strength Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Structural Support

Component	Component Type in Table 3.5.2.A-1	Intended Functions
Drywell	Structural Steel (Carbon and Low Alloy Steel) in Air	HELB Shielding Missile Barrier Pressure Boundary Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Drywell Coating	Coating	NSR Structural Support
Drywell Equipment Hatch	Equipment Hatches	Shielding Structural Pressure Barrier Shelter/Protection
Drywell Emergency Airlock	Airlocks	Shielding Structural Pressure Barrier Shelter/Protection
Drywell Floor	Concrete in Air	Shielding Structural Pressure Barrier Shelter/Protection Structural Support NSR Structural Support
Drywell Floor Seal	Seals and Gaskets	Structural Pressure Barrier
Drywell Head	Equipment Hatches	Shielding Structural Pressure Barrier Shelter/Protection
Drywell Head Closure Bolts	Fasteners (Wrought Austenitic Stainless Steel) in Air	Structural Support Structural Pressure Barrier
Drywell Head Manway	Equipment Hatches	Shielding Structural Pressure Barrier Shelter/Protection
Drywell Jet Deflector	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow Shelter/Protection
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Direct Flow Shelter/Protection
Drywell Personnel Airlock	Airlocks	Shielding Structural Pressure Barrier Shelter/Protection
Drywell Ring Girder	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Drywell Stabilizer Hatches	Equipment Hatches	Shielding Structural Pressure Barrier Shelter/Protection
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Expansion Joints (Mechanical)	Expansion Joints (Mechanical)	Pressure Boundary
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.A-1	Intended Functions
Moisture Barrier	Moisture Barrier	Structural Pressure Barrier Shelter/Protection
Primary Containment Bellows	Nickel-Based Alloys in Air, Cyclic Loading	Pressure Boundary Structural Support Structural Pressure Barrier
Primary Containment Sump	Concrete in Air	Direct Flow
Reactor Pedestal	Concrete in Air	Structural Support
Reactor Pedestal Anchor Bolts	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Shield Wall	Concrete in Air	Shielding Shelter/Protection Structural Support
Reactor Stabilizers	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Refueling Seal Platform	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Refueling Seal Platform Bellows	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Pressure Barrier
Refueling Seal Platform Covers	Aluminum Alloy in Air	Shelter/Protection
Seals and Gaskets	Seals and Gaskets	Structural Pressure Barrier
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Torus	Structural Steel (Carbon and Low Alloy Steel in Air	Pressure Boundary Structural Support Structural Pressure Barrier
	Structural Steel (Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Pressure Boundary Structural Support Structural Pressure Barrier
Torus Access Manhole Fasteners	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support
Torus Access Manholes	Equipment Hatches	Shielding Structural Pressure Barrier Shelter/Protection
Vacuum Breaker Small Bore Piping	Piping (Mechanical)	Pressure Boundary

Component	Component Type in Table 3.5.2.A-1	Intended Functions
Vacuum Relief Piping	Piping (Mechanical)	Pressure Boundary
Vacuum Relief Valves	Valves (Mechanical)	Pressure Boundary
Vent Header Deflector	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow Shelter/Protection
Vent Header Supports	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Demineralized Untreated Water, Low Flow	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water, Low Flow	Structural Support

2.4.A.2 NMP1 REACTOR BUILDING

Description

The NMP1 RB is a seismic Class I structure which encloses the PCS pressure suppression system. The RB is a multi-floored structure, comprising a substantial reinforced concrete substructure with reinforced concrete walls extending up to the operating floor level and a steel framed superstructure above the operating floor level. The rectangular RB structure is bounded on its south and east faces by the Turbine Building (TB) auxiliary equipment area and auxiliary extension building, respectively. Airlocks are provided on the areas of the building where access doors are provided. The reinforced concrete building substructure is founded on bedrock. Precast concrete panels and uninsulated metal wall panels are applied to the exterior of the reinforced concrete walls of the reactor building, except around the airlocks. However, these panels do not form a part of the building support. Metal wall panels and roofing above the operating floor are leak tight.

This structure provides secondary containment when the pressure suppression system is in service, and primary containment during refueling, maintenance, or testing, when the PCS is open or not required. The major safety function of the secondary containment is to minimize ground-level release of airborne radioactive materials by providing controlled, elevated release of the building atmosphere through a filter system under accident conditions.

The RB houses the refueling and reactor servicing equipment, fresh and spent fuel storage facilities, and other reactor auxiliary or service equipment.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire RB is made up of components that require an AMR.

USAR Reference(s)

More information about the RB can be found in USAR Section VI.C.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the RB and their intended functions are shown in Table 2.4.A.2-1. The AMR results for these component types are provided in Table 3.5.2.A-2.

Table 2.4.A.2-1
NMP1 Reactor Building

Component	Component Type in Table 3.5.2.A-2	Intended Functions
Blowout Panels	Metal Siding in Air	Pressure Relief
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete & Grout	Concrete in Air	Structural Support
Concrete Columns	Concrete in Air	Structural Support
Concrete Curbs	Concrete in Air	Direct Flow

Component	Component Type in Table 3.5.2.A-2	Intended Functions
Concrete Floors	Concrete in Air	Fire Barrier Shelter/Protection NSR Structural Support Structural Pressure Barrier Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Shelter/Protection NSR Structural Support Structural Pressure Barrier Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Shelter/Protection NSR Structural Support Structural Pressure Barrier Structural Support
	Concrete in Soil Above the Ground Water Table (GWT)	Shelter/Protection NSR Structural Support Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection NSR Structural Support Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier Structural Pressure Barrier
		Structural Pressure Barrier
		Structural Pressure Barrier Shelter/Protection
Drywell Shield Wall	Concrete in Air	Shelter/Protection Structural Support
Drywell Shield Wall Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Electrical and Air Duct Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
Fuel Pool Gate Gaskets	Polymer in Treated Water	Structural Pressure Barrier
Fuel Pool Gates	Aluminum Alloys in Air	Direct Flow
	Aluminum Alloys in Treated Water	Direct Flow
Fuel Transfer Canal	Concrete in Air	Structural Support
Fuel Transfer Canal Liner	Liners	Structural Pressure Barrier
Hatch Cover Seals	Seal and Gaskets	Structural Pressure Barrier

Component	Component Type in Table 3.5.2.A-2	Intended Functions
Hatch Covers	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Main Steam Tunnel	Concrete in Air	Fire Barrier Shielding Structural Pressure Barrier Shelter/Protection Structural Support
Masonry Walls	Block Wall in Air	Fire Barrier Structural Pressure Barrier
Penetration Seal Clamps	Fasteners (Wrought Austenitic Stainless Steel) in Air	Structural Support
Penetration Seals	Seal and Gaskets	Structural Pressure Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Pressure Barrier Flood Barrier Structural Support
Precast Concrete Panels	Concrete in Air	Structural Support
Reactor Building Foundation Fill Concrete	Concrete Lean Fill in Soil Above the GWT	Structural Support
	Concrete Lean Fill in Soil Below the GWT	Structural Support
Reactor Building Foundation Mat	Concrete in Soil Below the GWT	NSR Structural Support Structural Support
Reactor Building Metal Siding	Fasteners (Wrought Austenitic Stainless Steell) in Air	Structural Support
	Metal Siding in Air	Structural Pressure Barrier
Reactor Building Overhead Crane Rail Clips and Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Building Overhead Crane Rail Crane Girder	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Building Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Reactor Head Cavity	Concrete in Air	Structural Support
Reactor Head Cavity Liner	Liners	Structural Pressure Barrier
Reactor Internal Storage Pit	Concrete in Air	Structural Support
Reactor Internal Storage Pit Liner	Liners	Structural Pressure Barrier
Reactor Shield Plug Liners	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Pressure Barrier
Reactor Shield Plugs	Concrete in Air	Structural Support

Component	Component Type in Table 3.5.2.A-2	Intended Functions
Refueling Platform Rubber Seal	Seal and Gaskets	NSR Structural Support
Refueling Platform Track Anchor Bolts	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Refueling Platform Track and Embedded Plate	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Removable Masonry Wall Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Wall Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Rock Anchors	Rock Anchors (Carbon and Low Alloy Steel) in Soil Below the GWT	Structural Support
Sealing Compounds	Seal and Gaskets	Direct Flow Structural Pressure Barrier
Seals and Gaskets	Seal and Gaskets	Structural Pressure Barrier
Spent Fuel Storage Pool	Concrete in Air	Structural Support
Spent Fuel Storage Pool Liner	Liners	Structural Pressure Barrier
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support Shelter/Protection
Structural Fasteners	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support
	Fasteners (Wrought Austenitic Stainless Steell) in Treated Water	Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Sump Liner Fasteners (Reactor Building and Auxiliary Bay)	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow Flood Barrier
Torus Ring Girder	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Torus Saddle Anchors	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Torus Support Column Sway Rod Turnbuckles	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Torus Support Column Sway Rods	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.A-2	Intended Functions
Torus Support Columns	Torus Support Columns	Structural Support
Torus Support Foundation	Concrete in Soil Below the GWT	Structural Support NSR Structural Support

2.4.A.3 NMP1 ESSENTIAL YARD STRUCTURES

Description

The NMP1 Essential Yard Structures (EYS) include the seismic Class I and Class II essential yard buildings, plus structures and civil foundation supports for safety related electrical or mechanical equipment items located within the Yard. The Yard is defined as the owner controlled outside areas surrounding the major NMP1 plant buildings, both inside and outside the NMPNS protected area. The earthen structures, which provide flood protection to the site, are included in the NMP2 EYS (Section 2.4.B.6). Included in the EYS are the Administration Building and the Administration Building Extension and the Radwaste Pipe Tunnel Extension. The Administration Building Extension is a Class II Structure and is seismically designed due to its proximity to the NMP1 Diesel Generator Rooms. Also included are safety-related tank foundations. There are no class 1E ductlines or manholes in the yard at NMP1. The EYS also include the structures that support the equipment and high voltage lines in the 115KV switchyard for Station Blackout (SBO). The SBO components are addressed in the 115KV AC Electrical Distribution System (Section 2.5.A.6).

These structures are in scope for license renewal for the following reasons:

- They perform a safety-related function per 10 CFR 54.4(a)(1).
- They contain NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- They contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), and station blackout (10 CFR 50.63).

The components subject to an AMR include concrete, structural steel, polymers, and fasteners in the Administration Building Extension; concrete in the Radwaste Pipe Tunnel Extensionand Emergency Diesel Fuel Oil Storage Tank foundations; the concrete pad and protective wood structure for the Nitrogen Storage Tank; and concrete, structural steel, and fasteners in the structures that support SBO components.

USAR Reference(s)

More information about the Administration Building Extension can be found in USAR Section III.E.1.1. More information about the Radwaste Pipe Tunnel can be found in USAR Section III.I.3.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the EYS and their intended functions are shown in Table 2.4.A.3-1. The AMR results for these component types are provided in Table 3.5.2.A-3.

Table 2.4.A.3-1
NMP1 Essential Yard Structures

Component	Component Type in Table 3.5.2.A-3	Intended Functions
Administration Building Concrete Columns	Concrete in Air	NSR Structural Support
Administration Building Concrete Floors	Concrete in Air	NSR Structural Support
Administration Building Concrete Foundation	Concrete in Soil Above the GWT	NSR Structural Support
	Concrete in Soil Below the GWT	NSR Structural Support
Administration Building Concrete Walls	Concrete in Air	Fire Barrier NSR Structural Support
Administration Building Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection NSR Structural Support
Administration Building Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Administration Building Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Concrete Encasement of Ductlines	Concrete in Soil Above the GWT	Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Structural Support NSR Structural Support
Emergency Diesel Fuel Oil Tank Foundations	Concrete in Soil Above the GWT	Structural Support
	Concrete in Soil Below the GWT	Structural Support
Nitrogen Tank Foundations	Concrete in Air	Fire Barrier Structural Support

Component	Component Type in Table 3.5.2.A-3	Intended Functions
		NSR Structural Support
	Concrete in Soil Above the GWT	Structural Support
Nitrogen Tank Protective Structure	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
	Treated Wood in Air	Shelter/Protection
Pipe Tunnels	Concrete in Air	Structural Support
	Concrete in Soil Above the GWT	Structural Support
	Concrete in Soil Below the GWT	Structural Support
SBO Equipment Foundations	Concrete in Air	NSR Structural Support
	Concrete in Soil Above the GWT	NSR Structural Support
	Concrete in Soil Below the GWT	NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Polymer Bearing Pad	Polymer in Air, Relative Motion (Bearing Plate)	NSR Structural Support

2.4.A.4 NMP1 FUEL HANDLING SYSTEM

Description

The NMP1 Fuel Handling System involves those components used to move fuel from the time of receipt of new fuel to the storage of spent fuel in the spent fuel storage pool. Components that are evaluated in the Fuel Handling System include the refueling platform, fuel preparation machines, and spent fuel racks. Although the reactor building crane handles fuel, it is analyzed in the Material Handling System (Section 2.4.A.5).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for the Fuel Handling System are the fuel preparation machines; the refueling platform; and the spent fuel pool storage racks, including the structural steel and fasteners.

USAR Reference(s)

More information about the Fuel Handling System can be found in USAR Section X.J.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Fuel Handling System and their intended functions are shown in Table 2.4.A.4-1. The AMR results for these component types are provided in Table 3.5.2.A-4.

Table 2.4.A.4-1
NMP1 Fuel Handling System

Component	Component Type in Table 3.5.2.A-4	Intended Functions
Fuel Preparation Machines	Structural Steel (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Treated Water	NSR Structural Support
Spent Fuel Rack Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Treated Water	Structural Support
Spent Fuel Racks	Spent Fuel Racks	Structural Support

2.4.A.5 NMP1 MATERIAL HANDLING SYSTEM

Description

The NMP1 Material Handling System consists of overhead traveling cranes, monorail hoists, platform cranes, jib cranes, and associated mechanical and electrical components. For license renewal purposes, the crane girders and rails are included in the structural steel asset of the structure in which the crane is located.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components that require an AMR are the 150-ton capacity Turbine Building crane, 30-ton capacity Turbine Building crane, Decontamination Area Monorail hoist, 25-ton Screen House crane, Turbine Building monorail hoist, Reactor Building jib crane, Screenhouse gate hoists, and the 125-ton capacity RB crane.

USAR Reference(s)

More information about the Material Handling System can be found in USAR Section X.J.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Material Handling System and their intended functions are shown in Table 2.4.A.5-1. The AMR results for these component types are provided in Table 3.5.2.A-5.

Table 2.4.A.5-1
NMP1 Material Handling System

Component	Component Type in Table 3.5.2.A-5	Intended Functions
Decontamination Area Monorail Hoist	Hoists	NSR Structural Support
Reactor Building Crane	Crane (Reactor Building)	Structural Support NSR Structural Support
Reactor Building Jib Crane	Handling Crane	NSR Structural Support
Screen House Building Crane	Handling Crane	NSR Structural Support
Screen House Building Gate Hoists	Hoists	Structural Support NSR Structural Support
Turbine Building 30 Ton Capacity Crane	Handling Crane	NSR Structural Support
Turbine Building Crane	Handling Crane	NSR Structural Support
Turbine Building Monorail Hoist	Hoists	NSR Structural Support

2.4.A.6 NMP1 OFFGAS BUILDING

Description

The NMP1 Offgas Building (OGB) is a seismic Class I structure. The OGB is located adjacent to the Turbine Building (Section 2.4.A.10) and the Waste Disposal Building (Section 2.4.A.12). The OGB substructure is a reinforced concrete structure and is founded on bedrock. The superstructure is structural steel frame with exterior metal walls and masonry block. The interior walls of the substructure are reinforced concrete and concrete block. The OGB contains the piping and equipment associated with the Condenser Air Removal and Offgas System (Section 2.3.4.A.2).

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire OGB is made up of components that require an AMR.

USAR Reference(s)

More information about the OGB can be found in USAR Section III.D.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the OGB and their intended functions are shown in Table 2.4.A.6-1. The AMR results for these component types are provided in Table 3.5.2.A-6.

Table 2.4.A.6-1
NMP1 Offgas Building

Component	Component Type in Table 3.5.2.A-6	Intended Functions
Building Foundation	Concrete in Soil Below the GWT	Structural Support
Concrete and Grout	Concrete in Air	Fire Barrier Structural Support NSR Structural Support
Concrete Columns	Concrete in Air	Structural Support NSR Structural Support
Concrete Floors	Concrete in Air	Fire Barrier Structural Support NSR Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Structural Support
	Concrete in Soil Below the GWT	Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Masonry Wall Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support
Masonry Wall Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Masonry Walls	Block Wall in Air	Fire Barrier
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support

2.4.A.7 NMP1 PERSONNEL/EQUIPMENT ACCESS SYSTEM

Description

The NMP1 Personnel/Equipment Access System consists of doors, gates, and the electronic equipment that monitors their positions. The gates and electronic equipment are not in scope for license renewal.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

USAR Reference(s)

None

License Renewal Drawings

None

Components Subject to an AMR

All doors have been transferred to, and are addressed in, the appropriate structures where the doors are physically located. There are no other components subject to an AMR for this system.

2.4.A.8 NMP1 RADWASTE SOLIDIFICATION AND STORAGE BUILDING

Description

The NMP1 Radwaste Solidification and Storage Building (RSSB) is a seismic Class I structure located to the east of, and directly adjacent to, the OGB Section 2.4.A.6) and the Waste Disposal Building (Section 2.4.A.12). The RSSB is a reinforced concrete structure. The foundation mat is founded on bedrock. During normal operation, maintenance, and loading and unloading operations, the structure provides sufficient environmental isolation.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire RSSB is made up of components that require an AMR.

USAR Reference(s)

More information about the RSSB can be found in USAR Section III.I.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the RSSB and their intended functions are shown in Table 2.4.A.8-1. The AMR results for these component types are provided in Table 3.5.2.A-7.

Table 2.4.A.8-1
NMP1 Radwaste Solidification and Storage Building

Component	Component Type in Table 3.5.2.A-7	Intended Functions
Concrete & Grout	Concrete in Air	NSR Structural Support
Concrete Caissons	Concrete in Soil Below the GWT	NSR Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier NSR Structural Support Shielding
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier NSR Structural Support Shielding
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier NSR Structural Support Shielding
	Concrete in Soil Above the GWT	Flood Barrier NSR Functional Support
	Concrete in Soil Below the GWT	Flood Barrier NSR Functional Support
Doors and Framing/Hardware	Doors	Fire Barrier
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support

Component	Component Type in Table 3.5.2.A-7	Intended Functions
Masonry Walls	Block Wall in Air	Fire Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support
Pipe Tunnels	Concrete in Air	NSR Structural Support Shielding
	Concrete in Soil Above the GWT	NSR Structural Support Shielding
	Concrete in Soil Below the GWT	NSR Structural Support Shielding
Radwaste Building Foundation	Concrete in Soil Below the GWT	NSR Structural Support
Radwaste Building Sump	Concrete in Air	Direct Flow
	Concrete in Soil Above the GWT	Direct Flow
Roof Hatch	Structural Steel (Carbon and Low Alloy Steel) in Air	Shielding
Roof Plug Lifting Pins	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	NSR Structural Support
Seals and Gaskets	Seal and Gaskets	NSR Structural Support
Steel Liner	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support Structural Pressure Barrier
Steel Shield Wall	Structural Steel (Carbon and Low Alloy Steel) in Air	Shielding

2.4.A.9 NMP1 SCREEN AND PUMP HOUSE BUILDING

Description

The NMP1 Screen and Pump House (SPH) Building is a seismic Class I and Class II structure which is adjacent to the north wall of the RB and TB. The Class II superstructure is framed structural steel supported on a Class I reinforced concrete substructure that is founded on bedrock. The exterior wall is internally-insulated precast concrete panels. The SPH Building comprises channels for the flow of very large quantities of raw lake water, gates, stop logs for control of the flow, racks, screens for cleaning the water, and pumps.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire SPH Building is made up of components that require an AMR.

USAR Reference(s)

More information about the SPH Building can be found in USAR Section III.F.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the SPH Building and their intended functions are shown in Table 2.4.A.9-1. The AMR results for these component types are provided in Table 3.5.2.A-8.

Table 2.4.A.9-1
NMP1 Screen and Pump House Building

Component	Component Type in Table 3.5.2.A-8	Intended Functions
Building Foundation	Concrete in Soil Above the GWT	Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection Structural Support NSR Structural Support
Concrete and Grout	Concrete in Air	Structural Support NSR Structural Support
	Concrete in Raw Water	Structural Support NSR Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Shelter/Protection Structural Support NSR Structural Support
Concrete Piers	Concrete in Air	Shelter/Protection Structural Support NSR Structural Support
	Concrete in Raw Water	Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.A-8	Intended Functions
Concrete Slab	Concrete in Raw Water	Shelter/Protection Structural Support NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Raw Water	Shelter/Protection Structural Support Shutdown Cooling Water NSR Structural Support
	Concrete in Soil Above the GWT	Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection Structural Support NSR Structural Support
Crane Rails and Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Intake Structure	Concrete in Raw Water	Shutdown Cooling Water
	Concrete in Soil Below the GWT	Shutdown Cooling Water
Intake Structure Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Raw Water	NSR Structural Support
Intake Structure Structural Steel	Structural Steel (Carbon and Low Alloy Steel) in Raw Water	NSR Structural Support
Intake Tunnel	Concrete in Raw Water	Shutdown Cooling Water
	Concrete in Soil Below the GWT	Shutdown Cooling Water
Masonry Walls	Block Wall in Air	Fire Barrier
Miscellaneous Structural Steel	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Fire Barrier Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.A-8	Intended Functions
Wall Shoring	Structural Steel (Carbon and Low Alloy Steel) in Soil Above the GWT	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Soil Below the GWT	Structural Support

2.4.A.10 NMP1 TURBINE BUILDING

Description

The NMP1 Turbine Building (TB) is a Class II structure with integrated seismic Class I areas. The reinforced concrete turbine generator foundation pedestal is isolated from the floors of the building to minimize transmission of vibration to the floors. The reinforced concrete TB foundations are supported by concrete column piers founded on bedrock 15 to 25 feet below grade. The TB superstructure consists of an enclosed structural steel frame. The roof is covered with metal decking, insulation, and tar roofing material. Located within the TB are the Generating Area, the Auxiliary Equipment Area, the Feedwater Heater Area, the Auxiliary Extension Building, and the Control Room.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire TB is made up of components that require an AMR.

USAR Reference(s)

More information about the TB can be found in USAR Sections III.A and III.B.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the TB and their intended functions are shown in Table 2.4.A.10-1. The AMR results for these component types are provided in Table 3.5.2.A-9.

Table 2.4.A.10-1
NMP1 Turbine Building

Component	Component Type in Table 3.5.2.A-9	Intended Functions
Auxiliary Control Room Concrete Curbs	Concrete in Air	Direct Flow
Auxiliary Control Room Concrete Floors	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Auxiliary Control Room Concrete Walls	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support Structural Pressure Barrier NSR Structural Support
	Concrete in Soil Above the GWT	Shielding Structural Support Shelter/Protection Structural Pressure Barrier
	Concrete in Soil Below the GWT	Shielding Structural Support Shelter/Protection Structural Pressure Barrier
Auxiliary Control Room Masonry Walls	Block Wall in Air	Fire Barrier Shielding Structural Support
Beam Seats	Concrete in Air	Structural Support NSR Structural Support
Bearing Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Compressible Joints and Seals	Seal and Gaskets	Expansion/Separation
Concrete & Grout	Concrete in Air	Structural Support NSR Structural Support
Concrete Columns	Concrete in Air	Structural Support NSR Structural Support
Concrete Floors	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.A-9	Intended Functions
Concrete Slabs	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection Structural Support NSR Structural Support
Control Room Concrete Floors	Concrete in Air	Fire Barrier Shielding Structural Support Shelter/Protection Structural Pressure Barrier
	Concrete in Soil Above the GWT	Shielding Structural Support Shelter/Protection Structural Pressure Barrier
Control Room Concrete Walls	Concrete in Soil Below the GWT	Shielding Structural Support Shelter/Protection Structural Pressure Barrier
Control Room Metal Partition Wall	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Control Room Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Control Room Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Control Room Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Control Room/Auxiliary Control Room Penetration Seals	Seals and Gaskets	Structural Pressure Barrier
Control Room/Auxiliary Control Room Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support Structural Pressure Barrier
Diesel Generator Foundations	Concrete in Air	Structural Support
	Concrete in Soil Below in GWT	Structural Support
Diesel Generator Room Ceiling	Concrete in Air	Shelter/Protection Structural Support
Diesel Generator Room Concrete Floors	Concrete in Air	Fire Barrier Structural Support Shelter/Protection NSR Structural Support

Component	Component Type in Table 3.5.2.A-9	Intended Functions
Diesel Generator Room Concrete Slabs	Concrete in Air	Fire Barrier Structural Support Shelter/Protection NSR Structural Support
Diesel Generator Room Concrete Walls	Concrete in Air	Fire Barrier Structural Support Shelter/Protection NSR Structural Support
	Concrete in Soil Above the GWT	Structural Support Shelter/Protection NSR Structural Support
	Concrete in Soil Below the GWT	Structural Support Shelter/Protection NSR Structural Support
Diesel Generator Room Protection Panels	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Diesel Generator Room 102 Missile Shield	Structural Steel (Carbon and Low Alloy Steel) in Air	Missile Barrier
Doors and Framing/Hardware	Doors	Flood Barrier
		Flood Barrier Fire Barrier
		Fire Barrier
		Fire Barrier NSR Structural Support
		Shelter/Protection
		NSR Structural Support
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Main Steam Tunnel	Concrete in Air	Shielding Structural Support Shelter/Protection
Monorail Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support Structural Support
Removable Concrete Slabs	Concrete in Air	Shelter/Protection Shielding
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Wall Framing	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.A-9	Intended Functions
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Walls	Block Wall in Air	Shielding
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Turbine Building Blowout Panels	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Relief
Turbine Building Foundation Slab	Concrete in Soil Below the GWT	NSR Structural Support Structural Support
Turbine Building Manhole Cover and Frame	Gray Cast Iron in Air	Shelter/Protection
Turbine Building Overhead Crane Rail and Embedded Plate	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Turbine Building Overhead Crane Rail Clips and Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Turbine Building Sump Liner Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Turbine Building Sump Liners	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow Flood Barrier
Turbine Building Sump Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Turbine Building Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Turbine Support Structure	Concrete in Air	NSR Structural Support

2.4.A.11 NMP1 VENT STACK

Description

The NMP1 Vent Stack is a seismic Class I reinforced-concrete chimney, 350-ft high, located 100 ft east of the northeast corner of the RB. The height of the stack and the velocity of discharge provide a high degree of dilution for station effluents. The Vent Stack's foundation is on a massive reinforced concrete base, which extends to bedrock. From this base, it rises through the Turbine Auxiliary Building Extension from which it is completely isolated structurally.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components that require an AMR include the concrete portion of the Vent Stack that is in air and below grade, and the structural steel exposed portions of the embedded frame around the Vent Stack.

USAR Reference(s)

More information about the Vent Stack can be found in USAR Sections III.G and XII.A.2.1.4.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the Vent Stack and their intended functions are shown in Table 2.4.A.11-1. The AMR results for these component types are provided in Table 3.5.2.A-10.

Table 2.4.A.11-1
NMP1 Vent Stack

Component	Material/Environment Group in Table 3.5.2.A-10	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete Chimney Shell	Concrete in Air	Fire Barrier Gaseous Release Path Structural Support
Concrete Floors	Concrete in Air	Structural Support
Vent Duct Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Vent Stack Foundation	Concrete in Soil Below the GWT	Gaseous Release Path Structural Support

2.4.A.12 NMP1 WASTE DISPOSAL BUILDING

Description

The NMP1 Waste Disposal Building (WDB) and WDB Extension are seismic Class I structures located between and adjacent to the RSSB and the Turbine Auxiliary Extension Building. The WDB and Extension consist of reinforced concrete substructures with steel framed superstructures from grade to their respective roof elevations. The interior walls of the substructure are reinforced concrete. The superstructure walls are also reinforced concrete or concrete masonry units. The reinforced concrete building substructure is founded on bedrock.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire WDB is made up of components that require an AMR.

USAR Reference(s)

More information about the WDB can be found in USAR Section III.C.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the WDB and their intended functions are shown in Table 2.4.A.12-1. The AMR results for these component types are provided in Table 3.5.2.A-11.

Table 2.4.A.12-1
NMP1 Waste Disposal Building

Component	Component Type in Table 3.5.2.A-11	Intended Functions
Building Foundation	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
Compressible Joints and Seals	Seals and Gaskets	Flood Barrier Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support NSR Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Sumps	Concrete in Air	Direct Flow
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Masonry Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support
Masonry Walls	Block Wall in Air	Fire Barrier
Miscellaneous Structural Steel	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support

Component	Component Type in Table 3.5.2.A-11	Intended Functions
Steel Curbs	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow
Steel Sump Liner	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow
Steel Troughs	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier Shelter/Protection
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Fire Barrier Flood Barrier Shelter/Protection NSR Structural Support

2.4.B NMP2 STRUCTURES

The following structures are included in this subsection.

- NMP2 Primary Containment Structure (Section 2.4.B.1)
- NMP2 Reactor Building (Section 2.4.B.2)
- NMP2 Auxiliary Service Building (Section 2.4.B.3)
- NMP2 Control Room Building (Section 2.4.B.4)
- NMP2 Diesel Generator Building (Section 2.4.B.5)
- NMP2 Essential Yard Structures (Section 2.4.B.6)
- NMP2 Fuel Handling System (Section 2.4.B.7)
- NMP2 Main Stack (Section 2.4.B.8)
- NMP2 Material Handling System (Section 2.4.B.9)
- NMP2 Motor Operated Doors System (Section 2.4.B.10)
- NMP2 Radwaste Building (Section 2.4.B.11)
- NMP2 Screenwell Building (Section 2.4.B.12)
- NMP2 Standby Gas Treatment Building (Section 2.4.B.13)
- NMP2 Turbine Building (Section 2.4.B.14)

2.4.B.1 NMP2 PRIMARY CONTAINMENT STRUCTURE

Description

The NMP2 Primary Containment Structure (PCS) is a seismic Category I structure consisting of a drywell chamber, located above a suppression chamber, and a drywell floor, which separates the drywell chamber from the suppression chamber. It also includes the structural portions of primary containment penetrations. The PCS is supported on a 10-ft thick reinforced concrete mat, which also supports the RB. A series of 24-in diameter downcomer vent pipes penetrates the drywell floor. The drywell is a steel-lined reinforced concrete vessel in the shape of a frustum of two cones, closed by a dome with a torispherical head. The PCS contains a Mark II pressure suppression system. The pressure suppression chamber is a cylindrical stainless steel clad steel-lined reinforced concrete vessel located below the drywell. The PCS houses the RPV, the Reactor Recirculation System, and other branch connections of the reactor coolant pressure boundary. The function of the PCS is to restrict the release of radioactivity.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The entire PCS is made up of components that require an AMR.

USAR Reference(s)

More information about the PCS can be found in USAR Sections 3.8.1 and 3.8.3.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the PCS and their intended functions are shown in Table 2.4.B.1-1. The AMR results for these component types are provided in Table 3.5.2.B-1.

Table 2.4.B.1-1
NMP2 Primary Containment Structure

Component	Component Type in Table 3.5.2.B-1	Intended Functions
Beam Seats	Concrete in Air	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support
Bearing Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-1	Intended Functions
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support
Biological Shield Wall	Concrete in Air	HELB Shielding Missile Barrier Shielding Shelter/Protection Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	HELB Shielding Missile Barrier Shielding Shelter/Protection Structural Support
Biological Shield Wall Door Radiation Shields	Structural Steel (Carbon and Low Alloy Steel) in Air	Shielding
Biological Shield Wall Doors	Biological Shield Wall Doors	HELB Shielding Shielding
Concrete & Grout	Concrete in Air	Structural Support
Concrete Slabs	Concrete in Air	HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Containment Penetrations (Electrical)	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water	Pressure Boundary Structural Pressure Barrier Structural Support
Containment Penetrations (Instrument)	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water	Pressure Boundary Structural Pressure Barrier Structural Support

Component	Component Type in Table 3.5.2.B-1	Intended Functions
Containment Penetrations (Mechanical)	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water	Pressure Boundary Structural Pressure Barrier Structural Support
Control Rod Drive Removal Hatch	Hatches	Missile Barrier Pressure Boundary Shielding Shelter/Protection Structural Pressure Barrier
Downcomers	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Direct Flow Structural Pressure Barrier
	Structural Steel (Wrought Austenitic Stainless Steel) in DUWL	Direct Flow Structural Pressure Barrier
Drywell	Concrete in Air	HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Drywell Coating	Coating	NSR Structural Support
Drywell Emergency Escape Lock	Air Locks	Missile Barrier Pressure Boundary Shielding Shelter/Protection Structural Pressure Barrier
Drywell Equipment Hatch	Hatches	Missile Barrier Pressure Boundary Shielding Shelter/Protection Structural Pressure Barrier
Drywell Floor	Concrete in Air	HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Drywell Floor Concrete Insulation	Concrete in Air	Shelter/Protection
Drywell Floor Supplementary Steel	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-1	Intended Functions
Drywell Head	Drywell Head	Missile Barrier Pressure Boundary Shelter/Protection Structural Pressure Barrier
Drywell Head Closure Pins	Drywell Head Closure Pins	Pressure Boundary Structural Support Structural Pressure Barrier
Drywell Head Fasteners	Drywell Head Fasteners	NSR Structural Support
Drywell Head Stainless Steel Elements	Drywell Head	Missile Barrier Pressure Boundary Shelter/Protection Structural Pressure Barrier
Drywell Liner	Structural Steel (Carbon and Low Alloy Steel) in Air	Pressure Boundary Structural Pressure Barrier Structural Support
Drywell Personnel Airlock	Air Locks	Missile Barrier Pressure Boundary Shielding Shelter/Protection Structural Pressure Barrier
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Equipment Hatch Ring Beam	Concrete in Air	HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Impingement and Jet Shielding	Impingement and Jet Shielding	Direct Flow HELB Shielding
Inner Refueling Seal	Inner Refueling Seal	NSR Structural Support
Insulation Support Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Lubrite Plate	Copper Alloy (Zinc ≥ 15%) in Air	Structural Support
Monorail Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Pipe Whip Restraint Fasteners	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint
	Fasteners (Precipitation Hardenable)	Pipe Whip Restraint
Pipe Whip Restraints	Aluminum Alloy in Air	Pipe Whip Restraint
	Structural Steel (Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint
	Structurl Steel (Wrought Austenitic Stainless Steel) in Air	Pipe Whip Restraint

Component	Component Type in Table 3.5.2.B-1	Intended Functions
Precast Concrete Beams	Concrete in Air	Structural Support
Radiation Shields	Structural Steel (Carbon and Low Alloy Steel) in Air	Shielding
Reactor Pedestal	Concrete in Air	Structural Support
Reactor Pedestal Anchor Bolts	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Stabilizers	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Refueling Bulkhead	Refueling Bulkhead	Structural Pressure Barrier Structural Support
Sealing Compounds	Seals and Gaskets	Direct Flow Structural Pressure Barrier
Seals and Gaskets	Seals and Gaskets	Structural Pressure Barrier
Star Truss	Star Truss	Structural Support
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Insulation Liner	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Shelter/Protection
Structural Insulation Liner	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water	Shelter/Protection
Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Steel: Platforms, Stairways, Mezzanines, Removable Curbs	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Suppression Chamber Seal	Seals and Gaskets	Structural Pressure Barrier
Suppression Pool	Concrete in Air	HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support

Component	Component Type in Table 3.5.2.B-1	Intended Functions
Suppression Pool Access Hatches	Hatches	Missile Barrier Pressure Boundary Shielding Shelter/Protection Structural Pressure Barrier
Suppression Pool Liner	Structural Steel (Carbon/Low Alloy Steel Clad with Stainless Steel) in Air	Pressure Boundary Shelter/Protection Structural Pressure Barrier Structural Support
	Structural Steel (Carbon/Low Alloy Clad with Stainless Steel) in Demineralized Untreated Water	Pressure Boundary Shelter/Protection Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Boundary Shelter/Protection Structural Pressure Barrier Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Demineralized Untreated Water	Pressure Boundary Shelter/Protection Structural Pressure Barrier Structural Support
Water Level Indicator Shields	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow HELB Shielding

2.4.B.2 NMP2 REACTOR BUILDING

Description

The NMP2 Reactor Building (RB) is a seismic Category I structure that encloses the PCS. The RB wall is a reinforced concrete cylinder with varying wall thickness, extending from the top of the mat to the polar crane level. The wall from the crane rail elevation to the roof is steel framing with insulated metal siding. The metal siding panels have sealed joints to minimize air leakage.

The RB, including the auxiliary bays, is founded on a rock-bearing, reinforced concrete mat. The mat acts to support the RB, auxiliary bays, and the primary containment. The auxiliary bays are rigidly attached to the RB and considered part of the secondary containment structure.

The RB houses the refueling and reactor servicing equipment, new and spent fuel storage facilities, and other reactor auxiliary or service equipment, including the RCIC System, Reactor Water Cleanup System, Standby Liquid Control System, CRD System equipment, core standby cooling systems, RHR systems, and electrical equipment components. Included within the RB for the purposes of license renewal are the secondary containment, the north and south auxiliary bays, and the main steam tunnel east of the turbine building. The primary purposes for the secondary containment are to minimize ground level release of airborne radioactive materials and to provide means for a controlled elevated release of the building atmosphere. Civil/structural components from the Fuel Nuclear Transfer System and the Vents –Turbine and Reactor Building System are also evaluated as part of the RB.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire RB is made up of components that require an AMR.

USAR Reference(s)

More information about the RB can be found in USAR Section 3.8.4.1.1.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the RB and their intended functions are shown in Table 2.4.B.2-1. The AMR results for these component types are provided in Table 3.5.2.B-2.

Table 2.4.B.2-1
NMP2 Reactor Building

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Auxiliary Bay Foundations	Concrete in Soil Below the GWT	Structural Support
Auxiliary Bay Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Beam Pockets	Concrete in Air	Structural Support
Bearing Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support
Cask Pit Cavity	Concrete in Air	Structural Support
Cask Pit Cavity Liner	Liners	Structural Pressure Barrier
Cask Washdown Pit	Concrete in Air	Structural Support
Cask Washdown Pit Liner	Liners	Structural Pressure Barrier
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support
Concrete Columns	Concrete in Air	Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier HELB Shielding Structural Pressure Barrier Shielding Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier Flood Barrier Shelter/Protection
		Fire Barrier Structural Pressure Barrier Shelter/Protection
		Fire Barrier Shelter/Protection
		Flood Barrier Shelter/Protection
		Structural Pressure Barrier Shelter/Protection
		Shielding Shelter/Protection
		Shielding NSR Structural Support
		Shelter/Protection
		NSR Structural Support
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Fuel Pool Canal	Concrete in Air	Structural Support
Fuel Pool Canal Liner	Liners	Structural Pressure Barrier
Fuel Pool Gates	Fuel Pool Gates	Structural Support
Fuel Transfer Shielding Bridge	Fuel Transfer Shielding Bridge (Refueling Area)	NSR Structural Support
Main Steam Tunnel	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Miscellaneous Structural Steel Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Monorail Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Overpressurization Vent Panel Fasteners	Fasteners (Precipitation Hardenable) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Overpressurization Vent Panels	Aluminum Alloy in Air	Pressure Relief
	Overpressurization Vent Panels	Structural Support Pressure Relief
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Pressure Relief
Penetration Seal Clamps	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier Structural Pressure Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier Structural Pressure Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier Structural Pressure Barrier
Penetration Sleeves	Mechanical Penetrations (thimbles)	Flood Barrier Structural Support Structural Pressure Barrier
Pipe Whip Restraint Fasteners	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint
	Fasteners (Precipitation Hardenable) in Air	Pipe Whip Restraint
Pipe Whip Restraints	Structural Steel (Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint
Porous Concrete Pipe	Porous Concrete in Soil Below the GWT	Structural Support
Radiation Shields	Structural Steel (Carbon and Low Alloy Steel) in Air	Shielding
Rail Track and Support Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Building Foundation Mat	Concrete in Soil Below the GWT	Structural Support NSR Structural Support
Reactor Building Metal Siding	Metal Siding in Air	Shelter/Protection
Reactor Building Metal Siding Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Air	Structural Support
Reactor Building Polar Crane Rail and Embedded Plate	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Building Polar Crane Rail Clips and Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Reactor Building Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Reactor Head Cavity Pit	Concrete in Air	Structural Support
Reactor Head Cavity Pit Liner	Liners	Structural Pressure Barrier

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Reactor Head Cavity Plug Liners	Plug Liners	Structural Pressure Barrier
Reactor Head Cavity Plugs	Concrete in Air	Structural Support
Reactor Internal Storage Pool	Concrete in Air	Structural Support
Reactor Internal Storage Pool Liner	Liners	Structural Pressure Barrier
Refueling Bridge Crane Rail and Embedded Plate	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Refueling Bridge Crane Rail Clips and Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Refueling Canal/Dryer-Separator Canal Plug Liners	Plug Liners	Structural Pressure Barrier
Refueling Canal/Dryer-Separator Canal Plugs	Concrete in Air	Structural Support
Removable Concrete Slabs	Concrete in Air	Shelter/Protection
	Structrual Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Removable Masonry Wall Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Wall Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Sealing Compounds	Seals and Gaskets	Direct Flow Structural Pressure Barrier
Seals and Gaskets	Seals and Gaskets	Structural Pressure Barrier
Spent Fuel Pool Girders	Concrete in Air	Structural Support
Spent Fuel Pool Structural Steel Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Spent Fuel Storage Pool	Concrete in Air	Structural Support
Spent Fuel Storage Pool Liner	Liners	Structural Pressure Barrier
Spent Fuel Storage Pool Structural Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Treated Water	Structural Support
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-2	Intended Functions
Sump Liner Fasteners (Reactor Building and Auxiliary Bay)	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Sump Liners (Reactor Building and Auxiliary Bay)	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow Flood Barrier

2.4.B.3 NMP2 AUXILIARY SERVICE BUILDING

Description

The NMP2 Auxiliary Service Building (ASB) is a reinforced concrete and steel-framed structure. The ASB is surrounded by the RB (Section 2.4.B.2), Turbine Building (Section 2.4.B.14), and Control Room Building (Section 2.4.B.4). The ASB below elevation 261 ft is classified as seismic Category I. The basement floor is a reinforced concrete slab poured over electrical tunnels. The floor at elevation 261 ft is a concrete slab on steel deck supported by structural steel. The ASB contains the heating, ventilating and air conditioning room, instrument calibration facility, and decontamination and shower facilities for personnel.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire ASB is made up of components that require an AMR.

USAR Reference(s)

More information about the ASB can be found in USAR Section 3.8.4.1.10.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the ASB and their intended functions are shown in Table 2.4.B.3-1. The AMR results for these component types are provided in Table 3.5.2.B-3.

Table 2.4.B.3-1
NMP2 Auxiliary Service Building

Component	Component Type in Table 3.5.2.B-3	Intended Functions
Auxiliary Service Building Foundation	Concrete in Soil Below the GWT	Structural Support
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete & Grout	Concrete in Air	Structural Support Non-S/R Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Removable Concrete Slabs	Concrete in Air	Missile Barrier Shelter/Protection
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-3	Intended Functions
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support

2.4.B.4 NMP2 CONTROL ROOM BUILDING

Description

The NMP2 Control Room Building (CRB) is a seismic Category I structure. It is a five-story reinforced concrete and steel structure. The exterior walls and roof are constructed of reinforced concrete. The interior floors are concrete decking supported by steel framing. The building is founded on bedrock and is supported by a reinforced concrete mat. The upper four floors are reinforced concrete slabs on steel deck supported by structural steel. Underground concrete tunnels connect the CRB to the RB. The CRB contains the control room, safety-related switchgear, batteries, and associated equipment.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire CRB is made up of components that require an AMR.

USAR Reference(s)

More information about the CRB can be found in USAR Section 3.8.4.1.2.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the CRB and their intended functions are shown in Table 2.4.B.4-1. The AMR results for these component types are provided in Table 3.5.2.B-4.

Table 2.4.B.4-1
NMP2 Control Room Building

Component	Component Type in Table 3.5.2.B-4	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support
Concrete Columns	Concrete in Air	Shelter/Protection Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support

Component	Component Type in Table 3.5.2.B-4	Intended Functions
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Structural Pressure Barrier Shielding Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Missile Barrier Structural Pressure Barrier Shielding Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Structural Pressure Barrier Shielding Structural Support
Control Room Building Foundation	Concrete in Soil Below the GWT	Structural Support
Control Room Building Sump	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Doors and Framing/Hardware	Doors	Fire Barrier
		Flood Barrier
		Fire Barrier Flood Barrier Shelter/Protection
		Fire Barrier Structural Pressure Barrier Shelter/Protection
		Fire Barrier Shelter/Protection
		Missile Barrier Shelter/Protection
		Shelter/Protection
		NSR Structural Support
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-4	Intended Functions
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
Miscellaneous Structural Steel	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier Structural Pressure Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier Structural Pressure Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier Structural Pressure Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier Structural Pressure Barrier Structural Support
Removable Concrete Slabs	Concrete in Air	Shelter/Protection
	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Sealing Compounds	Seals and Gaskets	Structural Pressure Barrier
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Supplemental Structural Steel	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Suspended Seismic Support Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Tornado-proof Steel Duct	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Ventilation Duct Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

2.4.B.5 NMP2 DIESEL GENERATOR BUILDING

Description

The NMP2 Diesel Generator Building (DGB) is a seismic Category I reinforced concrete structure enclosing the three DGs and their associated equipment. The DGs are supported on reinforced concrete pedestals. The building is divided into three rooms separated by fire walls, each housing one DG. Fuel oil storage tanks are located below the building, with their fuel oil pumps housed in the individual DG rooms. The DGB is founded on bedrock and supported by reinforced concrete wall footings.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire DGB is made up of components that require an AMR.

USAR Reference(s)

More information about the DGB can be found in USAR Section 3.8.4.1.3.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the DGB and their intended functions are shown in Table 2.4.B.5-1. The AMR results for these component types are provided in Table 3.5.2.B-5.

Table 2.4.B.5-1
NMP2 Diesel Generator Building

Component	Component Type in Table 3.5.2.B-5	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete & Grout	Concrete in Air	Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
	Concrete in Soil Above the GWT	Direct Flow
Concrete Floors	Concrete in Air	Shelter/Protection Structural Support
Concrete Slabs	Concrete in Air	Shelter/Protection Structural Support

Component	Component Type in Table 3.5.2.B-5	Intended Functions
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Concrete Lean Fill	Concrete Lean Fill in Air	Structural Support
	Concrete Lean Fill in Soil Above GWT	Structural Support
	Concrete Lean Fill in Soil Below GWT	Structural Support
Crane Rails/Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Diesel Generator Building Foundation	Concrete in Soil Below the GWT	Structural Support
Diesel Generator Pedestals	Concrete in Soil Below the GWT	Structural Support
Diesel Generator Tank Foundations and Encasements	Concrete in Soil Below the GWT	Shelter/Protection Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier Shelter/Protection
		Shelter/Protection
		NSR Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
Manhole Cover and Frame	Gray Cast Iron in Air	Shelter/Protection
Missile Logs	Concrete in Air	Missile Barrier
	Structural Steel (Carbon and Low Alloy Steel) in Air	Missile Barrier
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-5	Intended Functions
Oil Sump	Concrete in Air	Direct Flow
	Concrete in Soil Above the GWT	Direct Flow
Sealing Compounds	Seals and Gaskets	Flood Barrier
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

2.4.B.6 NMP2 ESSENTIAL YARD STRUCTURES

Description

The NMP2 Essential Yard Structures (EYS) include, but are not limited to, electrical, piping, and vent tunnels; manholes; underground duct banks; and earth berms and ditches used for flood control. Seismic Category I electrical tunnels and piping tunnels contain Category I systems and are constructed of reinforced concrete. Included in the essential yard structures are all Class 1E duct banks and manholes. Earthen berms are located around the perimeter of the site to provide flood protection to the site. A stone-faced dike was constructed along the shoreline. The dike prevents flooding of the plant from high lake water levels and the effects of the probable maximum windstorm. The EYS also include the structures that support the equipment and high voltage lines in the 115KV switchyard and Scriba substation for SBO. The SBO components are evaluated in the NMP2 Switchyard System (Section 2.5.B.29).

These structures are in scope for license renewal for the following reasons:

- They perform safety-related functions per 10 CFR 54.4(a)(1).
- They contain NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- They contain SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and station blackout (10 CFR 50.63).

The components subject to an AMR include earthen berms, the stone-faced dike, concrete portions of the tunnels and the revetment ditch, penetrations through the piping tunnels, and structures that support SBO components.

USAR Reference(s)

More information about the Essential Yard Structures can be found in USAR Sections 2.4.2.3.3, 2.4.5.5, 2.5.1.1.5, 3.8.4.1.7, 8.3.1.3.2, and 8.3.1.4.2.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the EYS and their intended functions are shown in Table 2.4.B.6-1. The AMR results for these component types are provided in Table 3.5.2.B-6.

Table 2.4.B.6-1
NMP2 Essential Yard Structures

Component	Component Type in Table 3.5.2.B-6	Intended Functions
Bus Duct Enclosure	Aluminum Alloy in Air	NSR Structural Support
Class 1E Manhole Sumps	Concrete in Air	Direct Flow
	Concrete in Soil Below the GWT	Direct Flow
Compressible Joints and Seals	Seal and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support
Concrete Encasement of Ductlines	Concrete in Soil Below the GWT	Shelter/Protection Structural Support
Concrete Lean Fill	Concrete in Soil Below the GWT	Structural Support NSR Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier Shelter/Protection
		Shelter/Protection
		NSR Structural Support
Earthen Berm	Earthen Berm in Air	Flood Barrier
Electrical and Radwaste Tunnels Removable Concrete	Concrete in Air	Shelter/Protection Missile Barrier

Component	Component Type in Table 3.5.2.B-6	Intended Functions
Slabs	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Missile Barrier
Electrical and Radwaste Tunnels Steel Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Electrical and Radwaste Tunnels Steel Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support
Electrical and Radwaste Tunnels	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Flood Barrier NSR Structural Support
Manhole Covers and Frames	Gray Cast Iron in Air	Shelter/Protection
	Gray Cast Iron in Soil Above the GWT	Shelter/Protection
Manholes	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Mechanical Penetrations (thimbles)	Flood Barrier Structural Support
Pipe Tunnel Structural Framing	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support

Component	Component Type in Table 3.5.2.B-6	Intended Functions
Pipe Tunnels	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Pipe Tunnel Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Revetment Ditch	Revetment Ditch in Air	Flood Barrier
Sealing Compounds	Seals and Gaskets	Flood Barrier Structural Pressure Barrier
Service Water Tunnel	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Service Water Tunnel Removable Concrete Slabs	Concrete in Air	Shelter/Protection
	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Service Water Valve Pit	Concrete in Air	Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection Structural Support
Service Water Valve Pit Removable Concrete Slabs	Concrete in Air	Shelter/Protection
	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection
Service Water Valve Pit Sealants	Seals and Gaskets	Flood Barrier
Stone-Faced Dike	Stone-Faced Dike in Air	Flood Barrier
Structural Fasteners	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-6	Intended Functions
Transformer Area Walls	Concrete in Air	NSR Structural Support
	Concrete in Soil Above the GWT	NSR Structural Support
	Concrete in Soil Below the GWT	NSR Structural Support
Transformer Curbs	Concrete in Air	Direct Flow
Transformer Foundation Pads	Concrete in Air	NSR Structural Support
	Concrete in Soil Above the GWT	NSR Structural Support
	Concrete in Soil Below the GWT	NSR Structural Support
Vent Tunnel	Concrete in Air	Gaseous Release Path Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Gaseous Release Path Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Gaseous Release Path Shelter/Protection Structural Support
Vent Tunnel Fill Concrete	Concrete Lean Fill in Soil Below the GWT	Structural Support
115 kV Steel Transmission Towers	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
115 kV Steel Transmission Tower Foundations	Concrete in Air	NSR Structural Support
	Concrete in Soil Above the GWT	NSR Structural Support
	Concrete in Soil Below the GWT	NSR Structural Support
115 kV Wooden Transmission Towers	Treated Wood in Air	NSR Structural Support
	Treated Wood in Soil Above the GWT	NSR Structural Support
	Treated Wood in Soil Below the GWT	NSR Structural Support

2.4.B.7 NMP2 FUEL HANDLING SYSTEM

Description

The NMP2 Fuel Handling System involves those components used to move fuel from the time of receipt of new fuel to the storage of spent fuel in the spent fuel storage pool. Components that are evaluated in the Fuel Handling

System include the channel handling boom, the fuel preparation machines, the fuel transfer shielding bridge, the refueling crane platform and equipment, the new fuel storage vault, lifting and handling equipment, and spent fuel pool storage racks. Although the reactor building polar crane handles fuel, it is analyzed in the Material Handling System (Section 2.4.B.9). Civil/structural components from the Fuel Nuclear Refueling; Fuel Nuclear Storage; and Materials Handling Fuel Storage Area subsystems are also evaluated as part of the Fuel Handling System.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR for the Fuel Handling System include the channel handling boom, the fuel preparation machines, spent fuel pool storage racks, the refueling crane and platform equipment, the new fuel storage vault cover, new fuel storage racks, and miscellaneous lifting equipment.

USAR Reference(s)

More information about the Fuel Handling System can be found in USAR Sections 9.1.1, 9.1.2, and 9.1.4.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Fuel Handling System and their intended functions are shown in Table 2.4.B.7-1. The AMR results for these component types are provided in Table 3.5.2.B-7.

Table 2.4.B.7-1
NMP2 Fuel Handling System

Component	Component Type in Table 3.5.2.B-7	Intended Functions
Channel Handling Boom	Channel Handling Boom	NSR Structural Support
Control Blade Storage Frame	Storage Racks and Frames	Structural Support

Component	Component Type in Table 3.5.2.B-7	Intended Functions
Fuel Preparation Machines	Fuel Preparation Machines	Structural Support
Fuel Storage Racks	Storage Racks and Frames	Structural Support
Head Strongback Carousel	Carousel	Structural Support
In-Vessel Storage Rack	Storage Racks and Frames	Structural Support
New Fuel Storage Rack	New Fuel Storage Rack	Structural Support
New Fuel Storage Vault Cover	New Fuel Storage Vault Cover	NSR Structural Support
Recirculation Pump Motor Lifting Lugs	Recirculation Pump Motor Lifting Lugs	Structural Support
Refueling Crane and Platform Equipment	Refueling Crane and Platform Equipment	Structural Support
Steam Dryer Primary Lifting Beam	Lifting Beams	Structural Support

2.4.B.8 NMP2 MAIN STACK

Description

The NMP2 Main Stack is a seismic Category 1 reinforced-concrete chimney, approximately 430-ft high, located on the northeast side of the power station. The Main Stack is designed and constructed to provide elevated release of offgas, standby gas treatment, turbine building ventilation, and other systems. The Main Stack foundation is a on a reinforced concrete base, which extends to bedrock.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components that require an AMR include the entire Main Stack and miscellaneous steel and fasteners within the Main Stack.

USAR Reference(s)

More information about the Main Stack can be found in USAR Section 3.8.4.1.8.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the Main Stack and their intended functions are shown in Table 2.4.B.8-1. The AMR results for these component types are provided in Table 3.5.2.B-8.

Table 2.4.B.8-1
NMP2 Main Stack

Component	Component Type in Table 3.5.2B-8	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation Gaseous Release Path
Concrete Chimney Shell	Concrete in Air	Gaseous Release Path Shelter/Protection Structural Support
	Concrete in Soil Above the GWT	Gaseous Release Path Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Gaseous Release Path Shelter/Protection Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Shelter/Protection Structural Support
Concrete Slabs	Concrete in Air	Shelter/Protection Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support
Embedded Steel	Structural Steel (Carbon and Low Alloy Steel) in Air	Gaseous Release Path NSR Structural Support Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Main Stack Foundation	Concrete in Soil Below the GWT	Structural Support
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier NSR Structural Support

Component	Component Type in Table 3.5.2B-8	Intended Functions
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support

2.4.B.9 NMP2 MATERIAL HANDLING SYSTEM

Description

The NMP2 Material Handling System consists of overhead traveling cranes, monorail hoists, platform cranes, jib cranes, and associated mechanical and electrical components. For license renewal purposes, the crane girders and rails are included in the structural steel asset of the structure in which the crane is located.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components that require an AMR include the reactor building polar crane, the recirculation motor cranes, the Emergency Diesel Generator cranes, the safety relief valve hoists, the main steam isolation valve crane and hoists, the stop log area crane, the main turbine area crane, the control building equipment hoist on el. 306', and the screenwell area traveling crane.

USAR Reference(s)

More information about the Material Handling System can be found in USAR Appendix 9C.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Material Handling System and their intended functions are shown in Table 2.4.B.9-1. The AMR results for these component types are provided in Table 3.5.2.B-9.

Table 2.4.B.9-1
NMP2 Material Handling System

Component	Component Type in Table 3.5.2.B-9	Intended Functions
Control Building Equipment Hoist (El. 306)	Hoists	NSR Structural Support
Emergency Diesel Generator Cranes	Handling Cranes	NSR Structural Support
Main Steam Isolation Valve Crane	Handling Cranes	NSR Structural Support
Main Steam Isolation Valve Hoist	Hoists	NS/R Structural Support
Main Turbine Area Traveling Crane	Handling Cranes	NSR Structural Support
Reactor Building Polar Crane	Polar Crane	Structural Support
Recirculation Motor Handling Cranes	Handling Cranes	NSR Structural Support
Safety Relief Valve Hoists	Hoists	NSR Structural Support
Screenwell Area Traveling Crane	Handling Cranes	NSR Structural Support
Stop Log Area Crane	Handling Cranes	NSR Structural Support

2.4.B.10 NMP2 MOTOR OPERATED DOORS SYSTEM

Description

The NMP2 Motor Operated Doors System consists of various motor operated doors and the associated electronic equipment that monitors their positions.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

USAR Reference(s)

More information about the Motor Operated Doors System can be found in USAR Section 3.8.4.1.

License Renewal Drawings

None

Components Subject to an AMR

All doors have been transferred to, and are addressed in, the appropriate structures where the doors are physically located. The remaining electrical components are active components. There are no other components subject to an AMR for this system.

2.4.B.11 NMP2 RADWASTE BUILDING

Description

The NMP2 Radwaste Building (RWB) is a seismic Category I structure and contains the radioactive waste system. It is a five-story, concrete and steel building. The exterior walls are reinforced concrete. A rolling steel door is provided in the north wall for truck access into the building. The basement floor is a concrete mat on bedrock. The upper four floors are concrete supported by steel deck and beams. The roof consists of steel framing with steel deck, insulation, and four-ply, built-up roofing. The decontamination area is located south of the RWB, and is an extension of the TB and the RWB.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire RWB is made up of components that require an AMR.

USAR Reference(s)

More information about the RWB can be found in USAR Section 3.8.4.1.11.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the RWB and their intended functions are shown in Table 2.4.B.11-1. The AMR results for these component types are provided in Table 3.5.2.B-10.

Table 2.4.B.11-1
NMP2 Radwaste Building

Component	Component Type in Table 3.5.2.B-10	Intended Functions
Concrete and Grout	Concrete in Air	Structural Support
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Shielding NSR Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	NSR Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier Shielding NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Shielding NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shielding NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shielding NSR Structural Support
Decontamination Area Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Decontamination Area Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Decontamination Area Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support
Decontamination Area Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier Shielding Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-10	Intended Functions
Decontamination Area Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Decontamination Area Foundation	Concrete in Soil Below the GWT	Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Hotline Trough	Concrete in Air	Structural Support
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier NSR Structural Support
Radwaste Building Foundation	Concrete in Soil Below the GWT	NSR Structural Support
Radwaste Building Sump	Concrete in Air	Direct Flow
	Concrete in Soil Below the GWT	Direct Flow
Radwaste Building Sump Flange Plate	Structural Steel (Wrought Austenitic Stainless Steel) in Air	NSR Structural Support
Steel Liner	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Pressure Barrier NSR Structural Support
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-10	Intended Functions
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	NSR Structural Support

2.4.B.12 NMP2 SCREENWELL BUILDING

Description

The NMP2 Screenwell Building (SWB) consists of a concrete substructure and a steel frame superstructure. The substructure, below grade elevation 261'-0", including the service water pump room, is designated seismic Category I, whereas the steel frame superstructure, including the circulating water pump and water treatment area, is designed as a non-Category I area. The SWB includes the service water pump rooms, the diesel and electric fire pump rooms, the water treatment area, the circulating water pump area, and other associated equipment. Stop logs, traveling screens, trash rakes, etc., are set in the concrete walls, as required to divert the flow of water. These components are built-up structures of steel and concrete guided and supported by the reinforced concrete walls and floors.

For license renewal purposes, the SWB also includes the Intake Structures and the intake/discharge tunnels. Further information on these structures is provided below.

The seismic Category I Intake Structures are hexagonal-shaped reinforced concrete structures connected to the intake/discharge tunnels. The structures rest on a concrete slab founded on bedrock at the lake bottom and are anchored to the concrete-encased steel tiedowns embedded into the rock. The continuity of waterflow into the intake tunnel is assured by means of heated bar racks, one at each face of the hexagon.

The intake/discharge tunnels extend from the screenwell shaft eastward and northward under Lake Ontario to the intake structures. These tunnels are safety-related with the exception of the nonseismic, discharge portion of Tunnel No. 1 that extends beyond the intake structure to the discharge diffusers. The discharge water flows around the concrete encasement within the tunnel and is eventually discharged into the lake via a discharge diffuser.

The SWB is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The entire SWB is made up of components that require an AMR.

USAR Reference(s)

More information about the SWB can be found in USAR Sections 3.8.4.1.4, 3.8.4.1.5, and 3.8.4.1.6.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the SWB and their intended functions are shown in Table 2.4.B.12-1. The AMR results for these component types are provided in Table 3.5.2.B-11.

Table 2.4.B.12-1
NMP2 Screenwell Building

Component	Component Type in Table 3.5.2.B-11	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support NSR Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-11	Intended Functions
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier Missile Barrier Shelter/Protection Structural Support Non-S/R Structural Support
	Concrete in Raw Water	Flood Barrier Missile Barrier Shelter/Protection Structural Support NSR Structural Support Shutdown Cooling Water
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Crane Rails/Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Hot Line Tunnel	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Intake Shaft Access Door and Framing	Fasteners (Wrought Austenitic Stainless Steel) in Raw Water	Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Raw Water	Shelter/Protection Structural Support
Intake Shaft Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support

Component	Component Type in Table 3.5.2.B-11	Intended Functions
Intake Shafts	Concrete in Raw Water	Shutdown Cooling Water
	Concrete in Soil Above the GWT	Shutdown Cooling Water
	Concrete in Soil Below the GWT	Shutdown Cooling Water
Intake Structure Anchor Bolts	Expansion/Grouted Anchors (Wrought Austenitic Stainless Steel) in Raw Water	Structural Support
Intake Structure Bar Racks	Structural Steel (Wrought Austenitic Stainless Steel) in Raw Water	Shutdown Cooling Water
Intake Structure Concrete and Grout	Concrete in Raw Water	Structural Support
Intake Structure Fasteners	Fasteners (Wrought Austenitic Stainless Steel) in Raw Water	Structural Support
Intake Structure Hatch Cover and Manhole	Concrete in Raw Water	Shelter/Protection
	Structural Steel (Wrought Austenitic Stainless Steel) in Raw Water	Shelter/Protection
Intake Structure Structural Steel and Embedments	Structural Steel (Wrought Austenitic Stainless Steel) in Raw Water	Shutdown Cooling Water
Intake Structure Tremie Concrete	Concrete in Raw Water	Structural Support
Intake Structures	Concrete in Raw Water	Shutdown Cooling Water
Intake Tunnel Compressible Material	Polymer in Raw Water	Expansion/Separation
Intake Tunnel Concrete Lean Fill	Concrete Lean Fill in Raw Water	Structural Support
	Concrete Lean Fill in Soil Below the GWT	Structural Support
Intake Tunnels	Concrete in Raw Water	Shutdown Cooling Water
	Concrete in Soil Below the GWT	Shutdown Cooling Water
Masonry Walls	Block Wall in Air	Fire Barrier
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier Structural Support

Component	Component Type in Table 3.5.2.B-11	Intended Functions
Removable Concrete Slabs	Concrete in Air	Missile Barrier Shelter/Protection
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Steel Nose Piece	Structural Steel (Carbon and Low Alloy Steel) in Raw Water	Direct Flow
Screenwell Building Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Screenwell Building Foundation	Concrete in Soil Below the GWT	Structural Support
Service Water Pump Bay Sumps	Concrete in Raw Water	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Service Water Tunnel	Concrete in Air	Fire Barrier Flood Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier Shelter/Protection Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support
Service Water Valve Missile Protection	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Missile Barrier Shelter/Protection
Stop Log Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Raw Water	Structural Support
	Fasteners (Wrought Austenitic Stainless Steel) in Air	Structural Support
	Fasteners (Wrought Austenitic Stainless Steel) in Raw Water	Structural Support
Stop Log Seals	Seals and Gaskets	Direct Flow

Component	Component Type in Table 3.5.2.B-11	Intended Functions
Stop Logs and Guides	Structural Steel (Carbon and Low Alloy Steel) in Air	Direct Flow
	Structural Steel (Carbon and Low Alloy Steel) in Raw Water	Direct Flow
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Direct Flow
	Structural Steel (Wrought Austenitic Stainless Steel) in Raw Water	Direct Flow
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Raw Water	Structural Support NSR Structural Support
	Fasteners (Wrought Austenitic Stainless Steel) in Raw Water	Structural Support
Structural Foundation Piles	Structural Steel Foundation Piles (Carbon and Low Alloy Steel) in Undisturbed Soil	Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Raw Water	NSR Structural Support
Trash Racks and Guides	Fasteners (Carbon and Low Alloy Steel) in Raw Water	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Raw Water	Filter Shutdown Cooling Water

2.4.B.13 NMP2 STANDBY GAS TREATMENT BUILDING

Description

The NMP2 Standby Gas Treatment Building (SGTB) and railroad access area contain the SGT filters and associated equipment and allow access for spent fuel shipping. This structure is classified a seismic Category I structure up to elevation 286 ft. The portion of the building above elevation 286 ft is classified as nonseismic. The SGTB is a two-story, reinforced concrete and steel-framed structure. The structure shares a common wall with the railroad access lock adjacent to the RB. The reinforced concrete floor slab is provided at the grade level of elevation 261 ft. A railroad access lock approximately 25 x 90 ft is provided adjacent to the RB. This building is a reinforced concrete and steel-framed structure and shares a common wall with the SGTB.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire SGTB is made up of components that require an AMR.

USAR Reference(s)

More information about the SGTB can be found in USAR Section 3.8.4.1.9.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the SGTB and their intended functions are shown in Table 2.4.B.13-1. The AMR results for these component types are provided in Table 3.5.2.B-12.

Table 2.4.B.13-1
NMP2 Standby Gas Treatment Building

Component	Component Type in Table 3.5.2.B-12	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support

Component	Component Type in Table 3.5.2.B-12	Intended Functions
Concrete Floors	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Above the GWT	Structural Support NSR Structural Support
	Concrete Lean Fill in Soil Below the GWT	Structural Support NSR Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Shelter/Protection Structural Support NSR Structural Support
Concrete Walls	Concrete in Air	Fire Barrier Flood Barrier HELB Shielding Missile Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Flood Barrier HELB Shielding Missile Barrier Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Flood Barrier Shelter/Protection Structural Support NSR Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier HELB Shielding
		Fire Barrier Pressure Boundary
		Flood Barrier NSR Structural Support
		Missile Barrier
		Missile Barrier Pressure Boundary
		NSR Structural Support
Embedded Rail Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support

Component	Component Type in Table 3.5.2.B-12	Intended Functions
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Penetration Seals	Seals and Gaskets	Structural Pressure Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Standby Gas Treatment Building Foundation	Concrete in Soil Below the GWT	Structural Support NSR Structural Support
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support

2.4.B.14 NMP2 TURBINE BUILDING

Description

The NMP2 Turbine Building (TB) complex includes the TB, heater bays, main steam tunnel, and condensate demineralizer regenerative and offgas area. A portion of the TB, main steam tunnel area, and offgas area are analyzed to seismic conditions, whereas the remaining portions are designed as nonseismic. The complex houses the turbine generator, condenser, moisture separator, etc., in the TB areas, heaters and related pumps and accessories in heater bay areas, and offgas system equipment and tanks in offgas areas. The main steam tunnel connects the TB with the RB.

The TB complex is constructed partially on spread footings and partially on a mat foundation. This building complex is constructed of reinforced concrete floors and walls up to the operating floor level. The TB's operating floor is concrete supported by steel deck and beams. The structure above the operating floor level is constructed of a structural steel framing system braced by vertical and horizontal bracing systems up to roof level, enclosed by metal siding. A steel roof deck with roofing is provided at the top of the structure.

This structure is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The entire TB is made up of components that require an AMR.

USAR Reference(s)

More information about the TB can be found in USAR Section 3.8.4.1.12.

License Renewal Drawings

- LR-NMP-S-1, Revision 0, License Renewal Site Plan

Components Subject to an AMR

The component types requiring an AMR for the TB and their intended functions are shown in Table 2.4.B.14-1. The AMR results for these component types are provided in Table 3.5.2.B-13.

Table 2.4.B.14-1
NMP2 Turbine Building

Component	Component Type In Table 3.5.2.B-13	Intended Functions
Compressible Joints and Seals	Seals and Gaskets	Expansion/Separation
Concrete and Grout	Concrete in Air	Structural Support NSR Structural Support
Concrete Columns	Concrete in Air	NSR Structural Support
Concrete Curbs	Concrete in Air	Direct Flow
Concrete Floors	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
Concrete Slabs	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.B-13	Intended Functions
Concrete Walls	Concrete in Air	Fire Barrier Shielding Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Above the GWT	Shelter/Protection Structural Support NSR Structural Support
	Concrete in Soil Below the GWT	Shelter/Protection Structural Support NSR Structural Support
Concrete Lean Fill	Concrete Lean Fill in Soil Below the GWT	Structural Support
Crane Rails/Girders	Structural Steel (Carbon and Low Alloy Steel) in Air	Non-S/R Structural Support
Doors and Framing/Hardware	Doors	Fire Barrier
		Fire Barrier Flood Barrier
		Fire Barrier Shielding
		Flood Barrier Shelter/Protection
Embedded Structural Plates	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support for Criterion (a)(1) Equipment Non-S/R Structural Support
Expansion/Grouted Anchors	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Main Steam Tunnel	Concrete in Air	Flood Protection HELB Shielding Shielding Shelter/Protection Structural Support NSR Structural Support
Masonry Walls	Block Wall in Air	Fire Barrier Shielding
Penetration Seal Clamp	Fasteners (Wrought Austenitic Stainless Steel) in Air	Flood Barrier
	Fasteners (Wrought Austenitic Stainless Steel) in Soil Below the GWT	Flood Barrier
Penetration Seals	Seals and Gaskets	Flood Barrier
Penetration Sleeves	Structural Steel (Carbon and Low Alloy Steel) in Air	Flood Barrier Non-S/R Structural Support
Pipe Whip Restraints	Structural Steel (Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint Shelter/Protection Structural Support

Component	Component Type in Table 3.5.2.B-13	Intended Functions
Pipe Whip Restraint Fasteners	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Pipe Whip Restraint Structural Support
	Fasteners (Wrought Austenitic Stainless Steel) in Air	Pipe Whip Restraint Structural Support
Removable Concrete Slabs	Concrete in Air	Shelter/Protection Shielding
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Wall Framing	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support
Removable Masonry Walls	Block Wall in Air	Shielding
Structural Beams	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Columns	Structural Steel (Carbon and Low Alloy Steel) in Air	Shelter/Protection Structural Support NSR Structural Support
Structural Fasteners	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Structural Steel: Platforms, Stairways, and Mezzanines	Structural Steel (Carbon and Low Alloy Steel) in Air	NSR Structural Support
Turbine Building Foundation	Concrete in Soil Below the GWT	Structural Support NSR Structural Support
Turbine Building Sumps	Concrete in Air	Direct Flow Flood Barrier
	Concrete in Soil Below the GWT	Direct Flow Flood Barrier
Turbine Support Mat	Concrete in Soil Below the GWT	NSR Structural Support
Turbine Support Structure	Concrete in Air	NSR Structural Support

2.4.C NMPNS STRUCTURAL COMMODITIES

The structural commodities for NMPNS are described in the following sections:

- Component Supports (Section 2.4.C.1)
- Fire Stops and Seals (Section 2.4.C.2)

2.4.C.1 COMPONENT SUPPORTS

Description

Component supports are connections between a system component and a plant structural member such as a concrete wall or floor or structural steel beam or column. Supports for both the distributive portions of systems and equipment, such as pumps and pressure vessels, are included as part of this commodity group. Supported components include vessels, piping, passive pump components, and heat exchangers. Supports for electrical cables, cable trays, cable tray missile shields, conduits, HVAC ducting, MCC cabinets, electrical enclosures, fans, filters, and heaters are also included in this commodity. Seismic restraints, which may or may not provide support during normal operation, are also considered part of this commodity.

NMP1 was licensed prior to the issuance of 10 CFR 50 Appendix A. General Design Criteria 4 of Appendix A required protection against the dynamic effects of pipe rupture or an analysis to demonstrate very low probability of rupture of high energy lines. As such, there are no pipe whip (high-energy line break) restraints. As stated in NMP1 USAR Section XV.C.2.2.4, the ability to cope with the consequences of high-energy line pipe ruptures is reviewed on a refuel cycle basis to assure that new fuel types/designs do not change the conclusions of these coping studies.

For NMP2, pipe whip restraints are evaluated as part of the structure rather than under the component supports commodity.

Some structural elements also have an intended function of structural support for components, but are evaluated with the structure rather than as part of this commodity because they form an integral part of the structure. An example of such an element is the reactor pedestal, which supports the reactor and biological shield wall but is considered part of the primary containment. For license renewal purposes, the boundaries of component supports are the surface of the structure and the surface of the component, except for welded or integrally cast or forged attachments to the component. For supports welded directly to the component, the boundary for license renewal purposes includes the weld to the component. For integrally cast or forged attachments to the component, these are not considered part of the support; however, the weld joining the support to the integral attachment is considered part of the support. For embedded anchor bolts associated with component supports, the portion protruding above the concrete is considered part of the component supports system, while the embedded portion of the anchor bolt is considered to be part of the concrete asset which is included under the associated structure. Note that these boundaries differ from and overlap with the ASME Section XI examination boundaries. The active portion of snubber supports screens out for license renewal purposes, but the passive portions are subject to aging management review.

This commodity is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).

The components subject to an AMR include all component supports as described above.

USAR Reference(s)

More information about the Component Supports can be found in NMP1 USAR Sections XV.C.2.2.4 and XVI.D.1.2, and NMP2 USAR Sections 3.9A.3.4 and 3.9B.3.4. Information regarding the cable tray missile shields can be found in NMP1 USAR Section IX.B.3.3.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Component Supports and their intended functions are shown in Table 2.4.C.1-1. The AMR results for these component types are provided in Table 3.5.2.C-1.

Table 2.4.C.1-1
Component Supports

Component	Component Type in Table 3.5.2.C-1	Intended Functions
ASME Class 1, 2, 3 and MC Hangers and Supports	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Precipitation Hardenable) in Air (NMP1 only)	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Precipitation Hardenable) in Air (NMP2 only)	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Treated Water	Structural Support NSR Structural Support
Cable Trays and Supports	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Cable Tray Missile Shields (NMP1 only)	Structural Steel (Carbon and Low Alloy Steel) in Air	Missile Barrier
Conduit	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Soil Above the GWT (NMP2 only)	Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.C-1	Intended Functions
Electrical Panels, Racks, Cabinets, and Other Enclosures	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural SupportNSR Structural Support
Equipment Supports and Foundations	Epoxy Grout in Air (NMP2 only)	Structural Support
	Expansion/Grouted Anchors (Wrought Austenitic Stainless Steel) in Air (NMP2 only)	Structural Support
	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Grout in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Treated Water	Structural Support NSR Structural Support
Instrumentation Racks, Frames, Panels, Enclosures	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Suppor NSR Structural Support
Lubrite Plates	Copper Alloy (Zinc < 15%) in Air, Relative Motion (NMP1 only)	Structural Support NSR Structural Support
	Copper Alloy (Zinc ≥ 15%) in Air, Relative Motion (NMP2 only)	Structural Support NSR Structural Support

Component	Component Type in Table 3.5.2.C-1	Intended Functions
Non-ASME Class Hangers and Supports	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (High Strength Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Treated Water	Structural Support NSR Structural Support
Tube Track	Expansion/Grouted Anchors (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Fasteners (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
	Structural Steel (Carbon and Low Alloy Steel) in Air	Structural Support NSR Structural Support
Vibration Isolating Elements	Polymeric Supports in Air with Vibratory Motion	Structural Support NSR Structural Support
	Structural Steel (Wrought Austenitic Stainless Steel) in Air with Vibratory Motion (NMP2 only)	Structural Support NSR Structural Support

2.4.C.2 FIRE STOPS AND SEALS

Description

The Fire Stops and Seals Commodity addresses penetration fire stop/seal materials and also structural fire seal materials. The following items are not included under this commodity:

- Process piping, electrical cables, or conduits running through the fire penetration; these are included under the associated mechanical or electrical system,
- Cast in place penetration sleeves and any flanges or welds; these are evaluated as part of the structural steel asset associated with the structure,
- Embedded portions of cast-in-place sleeves; these are included under the concrete asset for the structure, and

- Fire barrier walls, which are included under the structure.

This commodity is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

The components subject to an AMR include all fire stops and seals as described above.

USAR Reference(s)

More information about the Fire Stops and Seals can be found in NMP1 USAR Section X.10A.2.4.1.10 and NMP2 USAR Sections 9A.3.5.1.1, 9A.3.5.1.2, and 9A.3.5.1.3.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Fire Stops and Seals and their intended functions are shown in Table 2.4.C.2-1. The AMR results for these component types are provided in Table 3.5.2.C-2.

Table 2.4.C.2-1
Fire Stops and Seals

Component	Component Type in Table 3.5.2.C-2	Intended Functions
Aluminum Spacers	Aluminum Alloy in Air (NMP1 only)	Fire Barrier
Stainless Steel Clamps	Fasteners (Wrought Austenitic Stainless Steel) in Air	Fire Barrier
Fire Stop Materials	Fire Stop in Air	Fire Barrier
Fire Wrap Materials	Fire Wrap in Air	Fire Barrier
Penetration Extensions	Structural Steel (Carbon and Low Alloy Steel) in Air (NMP2 only)	Fire Barrier

2.5 SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS

The determination of electrical systems within the scope of license renewal is made by initially identifying NMPNS Electrical and Instrumentation and Controls (I&C) Systems and their design functions. Each system is then reviewed to determine those that satisfy one or more of the criteria contained in 10 CFR 54.4. This process is described in Section 2.1 and the results of the Electrical and I&C Systems review are included in Section 2.2. Section 2.1 also provides the methodology for determining the components within the scope of 10 CFR 54.4 that meet the requirements contained in 10 CFR 54.21(a)(1). The components that meet these screening requirements are identified in this section. These identified components require an aging management review for license renewal.

The NMP1 and NMP2 Electrical and I&C Systems are described in Section 2.5.A and Section 2.5.B, respectively. Additionally, electrical commodities are described in Section 2.5.C and supports for electrical cables, cable trays, conduits, cabinets, and enclosures are addressed in the Component Supports Commodity (Section 2.4.C.1). These commodities apply to both NMP1 and NMP2.

2.5.A NMP1 ELECTRICAL AND I&C SYSTEMS

The NMP1 Electrical and I&C Systems that are within scope are listed below:

- NMP1 24V DC Electrical Distribution System (Section 2.5.A.1)
- NMP1 125V DC Electrical Distribution System (Section 2.5.A.2)
- NMP1 120V AC Electrical Distribution System (Section 2.5.A.3)
- NMP1 600V AC Electrical Distribution System (Section 2.5.A.4)
- NMP1 4.16KV AC Electrical Distribution System[11] (Section 2.5.A.5)
- NMP1 115KV AC Electrical Distribution System[1] (Section 2.5.A.6)
- NMP1 Anticipated Transients Without Scram System (Section 2.5.A.7)
- NMP1 Communications System (Section 2.5.A.8)

[11] These systems comprise the NMP1 Switchyard

- NMP1 Plant Lighting System (Section 2.5.A.9)
- NMP1 Plant Process Computer System (Section 2.5.A.10)
- NMP1 Reactor Protection System (Section 2.5.A.11)
- NMP1 Remote Shutdown System (Section 2.5.A.12)

The following electrical system is within scope but is addressed in the Auxiliary Systems section since it contains mechanical components that are subject to an AMR:

- NMP1 Neutron Monitoring System (Section 2.3.3.A.13)

2.5.A.1 NMP1 24V DC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 24V DC Electrical Distribution (24VDC) System provides electrical power to the Neutron Monitoring System (Section 2.3.3.A.13) and certain process radiation monitors. The 24VDC System includes two independent systems consisting of battery chargers, batteries, nuclear instrumentation buses, circuit breakers, fuses, and switches. Normally the battery chargers both supply power to the system loads and maintain the batteries charged. If a loss of the normal power supply occurs, the batteries can supply the system loads for a minimum of four hours. AC power for this system is supplied from the 120 VAC System.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the 24VDC System can be found in USAR Section IX.B.2.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components in the 24VDC System that are subject to an AMR are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.2 NMP1 125V DC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 125V DC Electrical Distribution (125VDC) System supplies power to Reactor Protection System loads (Section 2.5.A.11), emergency lube oil pumps, valve operators, fire protection system equipment, and various system and component indication and protection instrumentation. The 125VDC System consists of batteries, static chargers, and battery boards. The batteries are kept fully charged by the static chargers. The static chargers also provide the DC power required for normal station operation as long as Alternating Current (AC) power is available. AC Power for this system is supplied by the 600 VAC System (Section 2.5.A.4).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 125VDC System can be found in USAR Section IX.B.4.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components in the 125VDC System that are subject to an AMR are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.3 NMP1 120V AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 120V AC Electrical Distribution (120VAC) System provides a reliable source of power for systems operating at 120VAC, which are required to be operational for station power production and for the shutdown and maintenance of the station in a safe shutdown condition under all postulated events and accident scenarios. The equipment powered by the 120VAC System includes Reactor Protection System loads (Section 2.5.A.11), various system and component instrumentation, the plant process computer, protection and control loads, solenoid operated valves, and alarm interposing relays for Control Room annunciators. The 120VAC System includes Uninterruptible Power Supplies (UPS) and Motor Generator (MG) sets. The safety related 120VAC System is divided into physically separate and electrically independent trains that perform redundant safety functions. Power for this system is supplied by the 600 VAC System (Section 2.5.A.4).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 120VAC System can be found in USAR Section IX.B.2.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components in the 120VAC System that are subject to an AMR are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.4 NMP1 600V AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 600V AC Electrical Distribution (600VAC) System is designed to provide a reliable source of power for equipment required to be operational for station power production and for the shutdown and maintenance of the station in a safe shutdown condition under design events and accident scenarios. The 600VAC System includes the various 600VAC power boards, Motor Control Centers (MCCs), associated 4160/600V transformers, and power distribution circuit breakers. Power to the 600VAC System is supplied by the 4.16 KV AC System (Section 2.5.A.5).

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 600VAC System can be found in USAR Sections IX.B.2 and XV.B.3.25.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components in the 600VAC System that are subject to an AMR are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.5 NMP1 4.16KV AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 4.16KV AC Electrical Distribution (4.16KVAC) System is designed to provide a reliable source of power for equipment required to be operational for station power production, and for the shutdown and maintenance of the station in a safe shutdown condition under all possible design events and accident scenarios (i.e. safety-related and HPCI loads). The 4.16KVAC System includes the 24KV/4.16KV station transformer, 115KV/4.16KV reserve transformers, 4.16KV powerboards, and the 4.16KV power distribution circuit breakers. Power to the 4.16KVAC System is normally supplied by the main generator and the 115KV AC Electrical Distribution System (Section 2.5.A.6). The safety-related 4.16 KV AC Power Boards are supplied by the emergency diesel generators in the event of a Loss of Offsite Power (LOOP) event.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 4.16KVAC System can be found in USAR Section IX.B.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components in the 4.16KVAC System that are subject to an AMR are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.6 NMP1 115KV AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP1 115KV AC Electrical Distribution (115KVAC) System is designed to provide a reliable source of offsite power for equipment required to be operational for station power production and for the shutdown and maintenance of the station in a safe shutdown condition under design events, and accident scenarios. The 115KVAC System includes two redundant and independent trains containing disconnect switches, breakers, and distribution bus. This system is relied upon to recover the unit from an SBO event by providing a source of offsite power. The electric grid provides power for the system.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 115KVAC System can be found in USAR Section IX.B.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the 115KVAC System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.7 NMP1 ANTICIPATED TRANSIENTS WITHOUT SCRAM SYSTEM

System Description

The NMP1 Anticipated Transients Without Scram (ATWS) System is designed to provide a rapid power reduction should a reactor scram fail to occur during a reactor vessel water level or pressure transient. The ATWS System has two separate sub-systems, Reactor Recirculation Pump Trip (ATWS/RPT) and Alternate Rod Insertion (ATWS/ARI). The ATWS/RPT System will initiate a power reduction by tripping the Reactor Recirculation Pumps, causing a reduction in flow through the reactor core. The ATWS/ARI operates a series of 125VDC solenoid valves to vent air pressure off the scram air header and allow all control rods to fully insert. The ATWS System consists of switches, breakers, indicators, fuses, system panels, and relays providing interconnection with other systems.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the ATWS System can be found in USAR Section VIII.A.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the ATWS System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.8 NMP1 COMMUNICATIONS SYSTEM

System Description

The NMP1 Communications System includes a dial telephone system, a station intercom / paging system, a maintenance system (portable headsets) and station radios. These systems are powered from the 125 VDC Electrical Distribution System (Section 2.5.A.2) either directly or indirectly via the Reactor Protection System (Section 2.5.A.11) buses.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Communications System can be found in USAR Section X.10A.2.4.5.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Communications System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.9 NMP1 PLANT LIGHTING SYSTEM

System Description

The NMP1 Plant Lighting System is designed to provide adequate lighting in necessary areas during normal and emergency operating conditions. The Plant Lighting System consists of the following lighting subsystems:

- Normal Station Lighting - The Normal Station Lighting System provides lighting in all areas of the Station under normal operating conditions.
- Emergency AC Lighting - The Emergency AC Lighting System provides lighting in selected areas to allow operators and maintenance personnel to perform necessary operations and repairs.
- Emergency Control Room DC Lighting – The Emergency Control Room DC Lighting System provides lighting in the Control Room for plant operation upon a loss of normal lighting.
- Emergency Battery Lighting - The Emergency Battery Lighting System provides lighting in areas required for operation of any safe shutdown equipment and their access and egress routes.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Plant Lighting System can be found in USAR Section X.10A.2.4.5.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Plant Lighting System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.10 NMP1 PLANT PROCESS COMPUTER SYSTEM

System Description

The NMP1 Plant Process Computer System monitors and records plant process variables, and performs calculations with selected input data. This system also provides safety-related isolation between the fiberoptics connections of Local Power Range Monitors, Axial Power Range Monitors, High Pressure Coolant Injection (HPCI) signals, and the plant computer.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the Plant Process Computer System can be found in USAR Section VIII.C.4.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Plant Process Computer System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.11 NMP1 REACTOR PROTECTION SYSTEM

System Description

The NMP1 Reactor Protection System (RPS) is designed to provide automatic and manual initiation of a reactor scram as well as automatic initiation of containment and reactor vessel isolation and safety system actuation. The RPS is a dual-redundant, fail-safe system, which consists of two independent logic channels. Each logic channel has its own input sensors, output pilot scram solenoid valves, backup scram valves, and source of power. Within each logic channel are two identical subchannels of tripping devices. Thus, the system has a total of four independent subchannels and operates on a one-out-of-two taken twice logic to initiate any automatic actions.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Reactor Protection System can be found in USAR Section VIII.A.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Reactor Protection System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.A.12 NMP1 REMOTE SHUTDOWN SYSTEM

System Description

The Remote Shutdown System is designed to provide plant operators with hot shutdown capability independent of the main and auxiliary control rooms. The Remote Shutdown System was designed to safely achieve hot shutdown during a fire, which causes a functional loss and/or evacuation of the main and auxiliary control rooms. The Remote Shutdown System consists of two independent panels which contain the required switches and instrumentation to scram the reactor, achieve and maintain a hot shutdown condition, and monitor selected plant parameters.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains NSR SCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

USAR Reference(s)

More information about the Remote Shutdown System can be found in USAR Section X.L.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Remote Shutdown System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B NMP2 ELECTRICAL AND I&C SYSTEMS

The NMP2 Electrical and I&C Systems that are within scope are listed below:

- NMP2 13.8KV AC Electrical Distribution System (Section 2.5.B.1)
- NMP2 4.16KV AC Electrical Distribution System (Section 2.5.B.2)
- NMP2 Battery-24V-Station System (Section 2.5.B.3)
- NMP2 Common Electrical System (Section 2.5.B.4)
- NMP2 Communications Paging System (Section 2.5.B.5)
- NMP2 Communications Telephone System (Section 2.5.B.6)
- NMP2 Emergency DC Distribution System (Section 2.5.B.7)
- NMP2 Emergency Uninterruptible Power Supplies (UPS) System (Section 2.5.B.8)
- NMP2 Feedwater Control System (Section 2.5.B.9)
- NMP2 Heat Tracing System (Section 2.5.B.10)
- NMP2 Information Handling Annunciator System (Section 2.5.B.11)
- NMP2 Motor Control Center Emergency System (Section 2.5.B.12)
- NMP2 Normal AC High Voltage Distribution System (Section 2.5.B.13)
- NMP2 Normal DC Distribution System (Section 2.5.B.14)
- NMP2 Normal UPS System (Section 2.5.B.15)
- NMP2 Process Computer System (Section 2.5.B.16)
- NMP2 Reactor Protection Motor Generator System (Section 2.5.B.17)
- NMP2 Reactor Protection System (Section 2.5.B.18)
- NMP2 Redundant Reactivity Control System (Section 2.5.B.19)
- NMP2 Remote Shutdown System (Section 2.5.B.20)

- NMP2 Reserve Station Service Transformers System (Section 2.5.B.21)
- NMP2 Standby and Emergency AC Distribution System (Section 2.5.B.22)
- NMP2 Standby Diesel Generator Protection (Breaker) System (Section 2.5.B.23)
- NMP2 Startup Transient Analysis System (Section 2.5.B.24)
- NMP2 Station Control Bus Nonvital AC Supply System (Section 2.5.B.25)
- NMP2 Station Control Bus Nonvital Indication System (Section 2.5.B.26)
- NMP2 Station Control Bus Vital AC Supply System (Section 2.5.B.27)
- NMP2 Station Lighting System (Section 2.5.B.28)
- NMP2 Switchyard System (Section 2.5.B.29)[12]
- NMP2 Synchronizing - Diesel Generator System (Section 2.5.B.30)
- NMP2 Unit Substation Emergency AC Controls and Heater Supply System (Section 2.5.B.31)
- NMP2 Unit Substation Emergency System (Section 2.5.B.32)
- NMP2 Unit Substation System (Section 2.5.B.33)
- NMP2 UPS Distribution System (Section 2.5.B.34)

The following electrical systems are within scope but are evaluated in the Auxiliary System section since they contain mechanical components that are subject to an AMR:

- NMP2 Containment Atmosphere Monitoring System (Section 2.3.3.B.6)
- NMP2 Containment Leakage Monitoring System (Section 2.3.3.B.7)
- NMP2 Neutron Monitoring System (Section 2.3.3.B.19)

[12] The equivalent NMP1 System consists of the NMP1 4.16KV AC Electrical Distribution System and the NMP1 115KV AC Electrical Distribution System.

- NMP2 Standby Diesel Generator Protection (Generator) System (Section 2.3.3.B.30)

2.5.B.1 NMP2 13.8KV AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP2 13.8KV AC Electrical Distribution (13.8KVAC) System delivers power from either the main generator or offsite sources (115KV or 345KV systems) to non-safety related 4.16KV and 600V onsite power systems. This system also provides power to normal (non-safety-related) 13.8 KV busses and emergency (safety-related) 13.8 KV busses. The normal 13.8 KV busses feed the safety related 13.8 KV busses under normal conditions, as well as the plant's 13.8KV non-safety motor loads. Two auxiliary electric boilers are also powered from the 13.8 KV winding of the auxiliary boiler transformer. Under normal conditions, the Reserve Station Service Transformers System (Section 2.5.B.21) is a backup source. The 13.8 KV busses also provide power for the reactor recirculation pump motors through the normal portion of the 4.16KV AC Electrical Distribution System (Section 2.5.B.2)

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the 13.8KVAC System can be found in USAR Section 8.3.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the 13.8KVAC System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.2 NMP2 4.16KV AC ELECTRICAL DISTRIBUTION SYSTEM

System Description

The NMP2 4.16KV AC Electrical Distribution (4.16KVAC) System provides a reliable source of AC power for equipment required for normal plant operation, shutdown, and maintenance under all postulated design basis accident scenarios. The normal distribution system provides power from the normal (non-safety-related) 13.8KV busses to the non safety related loads, auxiliary, and service loads through the 4.16KV busses, which also feed normal 600V load centers. The normal distribution system provides power to the non-safety-related loads, auxiliary, and service loads through the 4.16KV busses, which also feed normal 600V load centers. The normal distribution portion of the 4.16KVAC System consists of the switchgear busses, their associated breakers, and the step-down transformers. The emergency distribution portion of the 4.16KVAC System consists of busses, powered from offsite via the Reserve Station Service Transformers System (Section 2.5.B.21). These emergency busses make up three divisions of the plant emergency power, and have their own dedicated emergency diesel generator in the event of a Loss of Coolant Accident (LOCA) or LOOP. These busses supply the emergency 600V load centers (Division I and II) and the High Pressure Core Spray System (Section 2.3.2.B.3) MCCs (Division III). In the case of a LOOP, the system automatically transfers emergency 4.16 KV power sources from the offsite source to the EDGs.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the 4.16KVAC System can be found in USAR Section 8.3.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the 4.16KVAC System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.3 NMP2 BATTERY-24V-STATION SYSTEM

System Description

The NMP2 Battery-24V-Station (B24V) System is part of the 24VDC power system. It provides redundant DC power sources for the Neutron Monitoring System (Section 2.3.3.B.19). Each of the redundant sources consists of a bus, 24VDC batteries, and 24VDC battery chargers. Each charger is connected to the same busses as its associated battery. Each 24VDC battery has a normal battery charger capable of carrying the maximum continuous steady-state loads on the battery while recharging the battery from the design minimum charge state to the fully charged state. Each charger is fed from a 600V stub bus distribution panel through a 600-120/240V distribution transformer.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the B24V System can be found in USAR Section 8.1.5.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the B24V System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.4 NMP2 COMMON ELECTRICAL SYSTEM

System Description

The NMP2 Common Electrical System provides control functions and equipment for components controlled from outside the control room. The Common Electrical System, which also includes the Common Electrical System – Control Room Complex (i.e. controlled from the Control Room), contains a variety of components including panels, cabinets, electrical penetrations (including primary containment electrical penetrations), cables, circuit breakers, switches, and indicators.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

None

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Common Electrical System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.5 NMP2 COMMUNICATIONS PAGING SYSTEM

System Description

The NMP2 Communications Paging System provides for communication between various buildings and locations. The plant emergency alarms and evacuation signals are provided by this system, and it contains safety-related electrical penetrations. The system's loudspeakers form two physically and electrically independent subsystems to ensure redundant paths of communication throughout the plant. Handset stations are located so that they will meet the minimum requirements for manual fire alarm pull stations. This system is powered from the plant normal UPS system (Section 2.5.B.34).

This system is in scope for license renewal for the following reasons:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Communications Paging System can be found in USAR Section 9.5.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Communications Paging System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.6 NMP2 COMMUNICATIONS TELEPHONE SYSTEM

System Description

The NMP2 Communications Telephone System consists of dial-type telephone sets located in selected areas within NMP2. The Communications Telephone System is powered from the 120VAC portion of the Normal UPS System (Section 2.5.B.15).

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Communications Telephone System can be found in USAR Section 9.5.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Communications Telephone System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.7 NMP2 EMERGENCY DC DISTRIBUTION SYSTEM

System Description

The Emergency DC Distribution System provides emergency 125VDC control power to the emergency (safety related) DC power system instrumentation, control, protection loads, and DC motors from the 600V emergency load centers. During a loss of AC power, DC control power is provided for at least two hours. The Emergency DC Distribution System includes DC switchgear/breakers, distribution panels, associated breakers, cables, busses, raceways, and indicators.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Emergency DC Distribution System can be found in USAR Section 8.3.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Emergency DC Distribution System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.8 NMP2 EMERGENCY UNINTERRUPTIBLE POWER SUPPLIES (UPS) SYSTEM

System Description

The NMP2 Emergency UPS System consists of 25KVA, 120V, single-phase UPS units and their associated distribution panels. The UPS units are normally fed from the Emergency Distribution System Division I and II subsystems (600VAC) with the emergency lighting bus as an alternate AC source. Additionally, the 125VDC emergency power system can also be used as a backup source of DC power. The UPS units provide power for the Emergency Core Cooling System instrumentation and control loads.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Emergency UPS System can be found in USAR Sections 8.3.1 and 8.3.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Emergency UPS System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.9 NMP2 FEEDWATER CONTROL SYSTEM

System Description

The NMP2 Feedwater Control System controls the flow of feedwater into the reactor vessel to maintain the vessel water level within predetermined limits during all normal plant operating modes. The Feedwater Control System utilizes vessel water level, steam flow, and feedwater flow to measure the water level in the reactor vessel, the feedwater flow rate into the reactor vessel, and the steam flow rate from the reactor vessel. During operation, these measurements are used for controlling feedwater flow. In the event of an ATWS, the Feedwater Control System initiates feedwater flow runback logic in conjunction with the recirculation flow runback to reduce reactor power.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Feedwater Control System can be found in USAR Section 7.7.1.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Feedwater Control System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.10 NMP2 HEAT TRACING SYSTEM

System Description

The NMP2 Heat Tracing System is designed to maintain the temperature of various plant process piping system and component temperatures within a predetermined value. Systems supported by the Heat Tracing System include the Standby Liquid Control System (Section 2.3.3.B.31), Post Accident Sampling System [part of the Process Sampling System (Section 2.3.3.B.21)], and Nitrogen System [part of the Compressed Air Systems (Section 2.3.3.B.5)]. Process piping and components associated with the Standby Liquid Control System must be maintained at a temperature, which will prevent precipitation of the sodium pentaborate from the solution during storage. Heat tracing is present on the lines to and from the hydrogen and oxygen analyzers. The heat tracing is designed to be available after a LOCA to maintain the temperature of the inlet gases higher that the saturation temperature for containment pressures after a LOCA. The nitrogen piping associated with containment inerting located in the yard area is provided with heat tracing to maintain the piping temperature at predetermined values.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Heat Tracing System can be found in USAR Appendix 6C, Section 6.4.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Heat Tracing System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.11 NMP2 INFORMATION HANDLING ANNUNCIATOR SYSTEM

System Description

The NMP2 Information Handling Annunciator System aids personnel during normal, abnormal, and emergency conditions in determining the status of various plant SSCs and in assessing conditions that may warrant corrective actions. The Information Handling Annunciator System consists of components that feed the information from the field to the annunciator system in the control room, the majority of which are optical isolators that carry safety and non-safety signals from the plant into the control room.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Information Handling Annunciator System can be found in USAR Section 7.1.2.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Information Handling Annunciator System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.12 NMP2 MOTOR CONTROL CENTER EMERGENCY SYSTEM

System Description

The NMP2 Motor Control Center (MCC) Emergency System is the onsite 600V emergency AC power system that supplies power to the safety related 600V emergency motor loads from the emergency (safety related) 4.16 KV busses. It is designed to power the equipment, systems, and loads required to safely shut down the reactor through the MCCs. The MCC Emergency System is divided into redundant independent divisions (i.e., Division I and II of the plants emergency electrical distribution system) that are electrically isolated and physically separated from each other, and powered from the Unit Substation Emergency System (Section 2.5.B.32).

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Motor Control Center Emergency System can be found in USAR Section 8.3.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Motor Control Center Emergency System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.13 NMP2 NORMAL AC HIGH VOLTAGE DISTRIBUTION SYSTEM

System Description

The NMP2 Normal AC High Voltage Distribution System consists of 600V MCCs which receive power from the normal 600V busses. The MCCs feed plant auxiliary motor loads, motor operated valves, and other loads. The 600V distribution panels feed the 120/240V and 120/208V distribution panels either directly via 120/240V or 120/208V distribution transformers, or through the plant UPS system, or lighting panels. The MCCs are a two-bus design to increase the reliability of supplying power.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Normal AC High Voltage Distribution System can be found in USAR Section 8.3.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Normal AC High Voltage Distribution System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.14 NMP2 NORMAL DC DISTRIBUTION SYSTEM

System Description

The NMP2 Normal 125 VDC Distribution System supplies 125VDC to normal switchgear, main transformer, reserve station service transformers, auxiliary boiler transformers, and other non-safety related systems. This system consists of batteries, battery chargers, DC switchgear, and distribution panels. Each battery is fed by a 600V bus under normal power conditions. This system is relied upon to supply power for plant lighting loads. Each of the non safety related batteries, under normal operating conditions, is fed by a 600VAC charger supplied by a stub-bus load center connected to a Standby Diesel Generator.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification

(10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Normal DC Distribution System can be found in USAR Section 8.3.2.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Normal DC Distribution System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.15 NMP2 NORMAL UPS SYSTEM

System Description

The NMP2 Normal UPS System powers a variety of non-safety loads such as local radiation monitors, communications, lighting, plant computer systems, and non-safety instrumentation. This system consists of a 5KVA, 120V, 1-phase unit, 10KVA, 120V, 1-phase units, and 75KVA, 120/208V, 3-phase UPS units, and their associated distribution panels. The 10KVA units provide power to the logic circuits for the Reactor Protection System (Section 2.5.B.18) and the safety-related MSIV control solenoids.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Normal UPS System can be found in USAR Section 8.3.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Normal UPS System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.16 NMP2 PROCESS COMPUTER SYSTEM

System Description

The NMP2 Process Computer System is designed to provide a determination of the plant status through a series of operations and calculations; improve data reduction, accounting, and logging functions; and supplement procedural requirements for control and manipulation during plant reactor startup and shutdown. This system also includes the Plant Data Historian System, which stores the data for later analysis. The Process Computer System consists of interface devices of the computer itself with the parent systems that provide the input to the computer, such as isolators and cables, fuses and breakers, keyboards and displays, power supplies and panels.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for environmental qualification (10 CFR 50.49) and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Process Computer System can be found in USAR Section 7.7.1.6.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Process Computer System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.17 NMP2 REACTOR PROTECTION MOTOR GENERATOR SYSTEM

System Description

The NMP2 Reactor Protection Motor Generator System supplies power to the Reactor Protection System (Section 2.5.B.18) solenoid-operated scram pilot valves via Motor Generators (MGs). The remainder of the system consists of the associated protective devices, distribution panels, and wiring. The scram pilot valve solenoids have an alternate power source from the plant's normal 600V power distribution system via a 600-120V, single phase, step-down transformer when an MG is out of service for maintenance. The MG motors receive power from the plant 600V MCCs.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the Reactor Protection Motor Generator System can be found in USAR Sections 7.2.1 and 8.3.1.1.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Reactor Protection Motor Generator System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.18 NMP2 REACTOR PROTECTION SYSTEM

System Description

The NMP2 Reactor Protection System is designed to prevent the reactor from operating under unsafe or potentially unsafe conditions. The Reactor Protection System is designed to provide a signal to cause rapid insertion of control rods (scram) and shut down the reactor when specific variables exceed predetermined limits. The Reactor Protection System consists of independent, functionally identical trip systems. Each trip system is divided into independent, functionally identical trip subchannels. These subchannels consist of the sensors, relays, contacts, switches and trip units, which initiate a scram to prevent the reactor from operating under potentially unsafe conditions, and provide signals to the DC solenoid-operated backup scram valves in the Control Rod Drive System (2.3.1.B.5).

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Reactor Protection System can be found in USAR Section 7.2.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Reactor Protection System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.19 NMP2 REDUNDANT REACTIVITY CONTROL SYSTEM

System Description

The NMP2 Redundant Reactivity Control System determines if there is an existing transient that exceeds certain Reactor Pressure Vessel (RPV) pressure and water level parameters and immediately activates ATWS prevention equipment. If the logic determines that a controlled shutdown is not occurring, the Redundant Reactivity Control System activates ATWS mitigation equipment. The Redundant Reactivity Control System is initiated in one of three ways: reactor vessel high dome pressure, reactor vessel low-low water level, or manually. The Redundant Reactivity Control System receives signals from other systems and processes the signals through its logic train. It then provides output signals to prevent an ATWS event by initiating an alternate rod injection, mitigate the consequences of an ATWS event by automatically initiating boron injection if reactor power is still too high, and limit the reactivity in the core. The Redundant Reactivity Control System includes cables, isolators and fuses from the sensors, transmitters, and controls to two logic panels. Each logic panel has independent channels, which when tripped by a single logic train will transmit a redundant reactivity control signal.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Redundant Reactivity Control System can be found in USAR Section 7.6.1.8.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Redundant Reactivity Control System are evaluated in Section 2.5.C, NMPNS Electrical

Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.20 NMP2 REMOTE SHUTDOWN SYSTEM

System Description

The Remote Shutdown System is designed to achieve a hot and then a cold reactor shutdown from outside the main control room. The Remote Shutdown System is required only when the main control room is inaccessible when normal plant operating conditions (or fires in the control room or relay room) exist, i.e., no transients or accidents are occurring. The system consists of relays, transmitters, indicators, annunciators, and switches.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

USAR Reference(s)

More information about the Remote Shutdown System can be found in USAR Section 7.4.1.4.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Remote Shutdown System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.21 NMP2 RESERVE STATION SERVICE TRANSFORMERS SYSTEM

System Description

The NMP2 Reserve Station Service Transformers System steps down the 115KV offsite power to some 13.8KV and 4.16KV portions of the NMP2

13.8KV AC Electrical Distribution System (Section 2.5.B.1) and the NMP2 4.16KV AC Electrical Distribution System (Section 2.5.B.2), respectively. The system consists of transformers and their associated support components: cables, raceways, switches, relays, and meters.

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Reserve Station Service Transformers System can be found in USAR Section 8.2.1.4.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Reserve Station Service Transformers System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.22 NMP2 STANDBY AND EMERGENCY AC DISTRIBUTION SYSTEM

System Description

The NMP2 Standby and Emergency AC Distribution System receives power from the emergency 600V busses for reliable power to safety-related loads and vital busses. It also supplies 120VAC power to vital division logic in order to initiate Emergency Core Cooling. The Standby and Emergency AC Distribution System consists of transformers, switches, fuses, breakers, cables, raceways, indicators, and electrical penetrations.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's

regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Standby and Emergency AC Distribution System can be found in USAR Section 8.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Standby and Emergency AC Distribution System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.23 NMP2 STANDBY DIESEL GENERATOR PROTECTION (BREAKER) SYSTEM

System Description

The NMP2 Standby Diesel Generator Protection (Breaker) System provides control logic for emergency diesel bus protection. System operation will trip the diesel generator breaker; it will not shutdown the Emergency Diesel Generator (EDG). The Standby Diesel Generator Protection (Breaker) System functions independent of the EDG.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Standby Diesel Generator Protection (Breaker) System can be found in USAR Section 8.3.1.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Standby Diesel Generator Protection (Breaker) System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.24 NMP2 STARTUP TRANSIENT ANALYSIS SYSTEM

System Description

The NMP2 Startup Transient Analysis System provides a means for high speed data acquisition to monitor, record, and analyze process signals from various power plant subsystems. This data is used to compute and track thermal power and thermal limits, and demonstrate plant response to transients. This system interfaces with numerous safety and non-safety indications for plant parameters.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), and environmental qualification (10 CFR 50.49).

USAR Reference

More information about the Startup Transient Analysis System can be found in USAR Section 7A.6.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Startup Transient Analysis System are evaluated in Section 2.5.C, NMPNS Electrical Commodities.

Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.25 NMP2 STATION CONTROL BUS NONVITAL AC SUPPLY SYSTEM

System Description

The NMP2 Station Control Bus Nonvital AC Supply System contains 600V Non-Safety Related busses that provide power for miscellaneous lights, heaters, and 120V controls from the normal 600V busses. It also provides control power for fire detection. The Station Control Bus Nonvital AC Supply System consists of transformers, panels, switches, fuses, breakers, cables, raceways, indicators, and electrical penetrations.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Station Control Bus Nonvital AC Supply System can be found in USAR Section 8.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Station Control Bus Nonvital AC Supply System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.26 NMP2 STATION CONTROL BUS NONVITAL INDICATION SYSTEM

System Description

The NMP2 Station Control Bus Nonvital Indication System provides regulated 120 VAC instrumentation and control bus normal power through several fused distribution panels. The normal power distribution system supplies control power to several plant systems including circuits required for ATWS. It receives power from the 600V NSR busses of the NMP2 Normal AC High Voltage Distribution System (Section 2.5.B.13). The system contains transformers, cables, raceways, fuses, and electrical penetrations.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and anticipated transients without scram (10 CFR 50.62).

USAR Reference(s)

More information about the Station Control Bus Nonvital Indication System can be found in USAR Section 8.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Station Control Bus Nonvital Indication System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.27 NMP2 STATION CONTROL BUS VITAL AC SUPPLY SYSTEM

System Description

The NMP2 Station Control Bus Vital AC Supply System supplies 120 VAC to vital control circuits, from the emergency 600V busses, in support of the Standby and Emergency AC Distribution System (Section 2.5.B.22). This system also supplies AC control power to the loads of the Reactor Building Heating, Ventilation and Air Conditioning System and the Containment Atmosphere Monitoring System. This system consists of panels and their associated transformers, circuit breakers, cables, and electrical penetrations.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Station Control Bus Vital AC Supply System can be found in USAR Section 8.3.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Station Control Bus Vital AC Supply System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.28 NMP2 STATION LIGHTING SYSTEM

System Description

The Station Lighting System is designed to provide adequate lighting in necessary areas during emergency and normal operating conditions. The Station Lighting System consists of the following lighting subsystems:

- Normal Station Lighting - The Normal Station Lighting System provides adequate lighting in all areas of the Station under normal operating conditions. This includes the Lighting AC Auxiliary Boiler Room System, Lighting AC Radwaste Building System, Lighting AC Reactor Building System, the Lighting AC Screenwell and Pumphouse System, the Lighting AC Service Building System, and the Lighting AC Turbine Area System.

- Emergency Lighting - The Emergency Lighting System provides adequate lighting required for operating the safety-related equipment during emergency conditions in the control room, DG rooms, emergency switchgear areas, and the relay and computer room. This system also provides lighting for passageways in areas where safety-related equipment is located.

- Essential Lighting - The Essential Lighting System provides partial lighting for certain critical areas requiring continuous lighting, such as the control room, the relay and computer room, standby DG rooms, emergency switchgear rooms, and the service water pump room. This system also provides lighting for passageways in areas where safety-related equipment is located.

- Egress Lighting - The Egress Lighting System provides adequate lighting for all egress signs inside the plant. This is designed as a separate system specifically for building egress under emergency conditions.

- Battery-pack Lighting - The Battery-pack Lighting System provides illumination in all areas required for operation of any safe shutdown equipment and their access and egress routes. The Battery-pack Lighting System also provides required illumination for access/egress to or from certain areas of the plant if the normal lighting in these areas is not available.

The Station Lighting System consists of supply breakers, relays, transformers, regulators, switches from the power supplies to the panels and light fixtures, and battery packs (including lights) for emergency lighting.

This system is in scope for license renewal for the following reasons:

- It performs safety-related functions per 10 CFR 54.4(a)(1).

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), and station blackout (10 CFR 50.63).

<u>USAR Reference(s)</u>

More information about the Station Lighting System can be found in USAR <u>Section 9.5.3</u>.

<u>License Renewal Drawings</u>

None (see <u>Components Subject to an AMR</u> below)

<u>Components Subject to an AMR</u>

Electrical components requiring an AMR for the Station Lighting System are evaluated in <u>Section 2.5.C</u>, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.29 NMP2 SWITCHYARD SYSTEM

System Description

The NMP2 Switchyard System is comprised of the 115KV switchyard support systems, the 345KV switchyard systems, the yard transformer systems, the station protection systems, and the generator synchronizing systems.

The 115KV switchyard support systems include the 115KV switchyard equipment and their support components from the offsite power supplies and the reserve station transformers. The 115KV switchyard support systems include the following subsystems:

- 115KV switchyard substation (Scriba)
- 115KV switchyard substation (NMP2)
- 115KV transmission line

The 345KV switchyard systems consist of cables, switches, and relays that route power from the main generator to the power grid. It also provides input to generator protection and turbine trips, and provides electrical fault signals for the protection of the 345KV lines. The 345KV switchyard systems include the following subsystems:

- 345KV transmission line
- 345KV switchyard substation

The yard transformer systems step up or step down voltage from the main generator via the main step-up transformer and its support components. They also provide power from the main generator stepped down from 25KV to 13.8KV for the plant's auxiliary and service loads via the station service transformer. The yard transformer systems include the following subsystems:

- Main transformer (including auxiliaries)
- Station service transformer normal (including auxiliaries)

The station protection systems provide protective signals and trips for the main, reserve, and normal station service transformers, the 115KV and 345KV switchyard, as well as the main generator. The station protection systems also supply protection relaying for the two reserve station transformers and auxiliary boiler transformer and their breakers. The station protection systems include the following subsystems:

- 115KV switchyard (Scriba and NMP2)
- 345KV Switchyard
- Station protection auxiliary boiler transformer
- Station protection generator
- Station protection main transformer
- Station protection reserve station service transformer
- Station protection normal station service transformer
- Station protection unit

The generator synchronizing systems provide the ability to parallel the main and normal station service transformers with their interconnecting electrical distribution systems. They also provide synchronization capability of the main generator with the 345KV-power system for offsite electrical delivery. The generator synchronizing systems include the following subsystems:

- Synchronizing main generator
- Synchronizing station service

This system is in scope for license renewal for the following reason:

- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the Switchyard System can be found in USAR Sections 8.1.3, 8.2.1, and 8.3.1.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Switchyard System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.30 NMP2 SYNCHRONIZING - DIESEL GENERATOR SYSTEM

System Description

The NMP2 Synchronizing - Diesel Generator System supports the Standby and Emergency AC Distribution System (Section 2.5.B.22) by preventing degradation of the power source during manual transfer from onsite to offsite power. This is accomplished by matching the voltage and the frequency of the incoming supply with the running supply from the diesel generator permitting the transfer of power sources with no interruption of power to the emergency system loads. This system consists of control switches, relays, and voltmeters.

This system is in scope for license renewal for the following reason:

- It performs a safety-related function per 10 CFR 54.4(a)(1).

USAR Reference(s)

More information about the Synchronizing - Diesel Generator System can be found in USAR Section 8.3.1.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Synchronizing - Diesel Generator System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.31 NMP2 UNIT SUBSTATION EMERGENCY AC CONTROLS AND HEATER SUPPLY SYSTEM

System Description

The NMP2 Unit Substation Emergency AC Controls and Heater Supply System supplies 120/240 VAC power to emergency heater and control circuits. It receives power from the Unit Substation Emergency System (Section 2.5.B.32). The Unit Substation Emergency AC Controls and Heater Supply System supplies loads in the Residual Heat Removal System (Section 2.3.2.B.7), Reactor Building Heating, Ventilation, and Air Conditioning System (Section 2.3.3.B.24), Low Pressure Core Spray System (Section 2.3.2.B.4), Spent Fuel Pool Cooling and Cleanup System (Section 2.3.3.B.28), Service Water System (Section 2.3.3.B.27), 13.8KV AC Electrical Distribution System (Section 2.5.B.1), 4.16KV AC Electrical Distribution System (Section 2.5.B.2), and the Control Building Chilled Water System (Section 2.3.3.B.8). The Unit Substation Emergency AC Controls and Heater Supply System consists of 600/120V transformers, cabling, panels, penetrations, and breakers to the loads that are physically located on the distribution panels.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Unit Substation Emergency AC Controls and Heater Supply System can be found in USAR Section 8.3.1.1.2.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Unit Substation Emergency AC Controls and Heater Supply System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.32 NMP2 UNIT SUBSTATION EMERGENCY SYSTEM

System Description

The NMP2 Unit Substation Emergency System is part of the Emergency Distribution System. The system receives power from the 4.16kV AC emergency switchgear buses, and supplies power to 600V load centers, MCCs, and distribution transformers. The system supplies power to ESF Systems under all conditions of plant operation. This system consists of panels, transformers, circuit breakers, switches, indicators, penetrations, cables, and raceways.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48) and environmental qualification (10 CFR 50.49).

USAR Reference(s)

More information about the Unit Substation Emergency System can be found in USAR Section 8.3.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Unit Substation Emergency System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.33 NMP2 UNIT SUBSTATION SYSTEM

System Description

The NMP2 Unit Substation System consists of the plant normal 600V distribution system load centers, which feed NSR loads. The 600V normal load centers are double ended split buses fed from normal 13.8KV switchgear buses or double ended buses without tie breakers fed from the 4.16KV stub buses. The associated MCCs further distribute the loads. This system consists of panels, electrical penetrations, cables, and raceways.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48).

USAR Reference(s)

More information about the Unit Substation System can be found in USAR Section 8.3.1.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the Unit Substation System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.B.34 NMP2 UPS DISTRIBUTION SYSTEM

System Description

The NMP2 UPS Distribution System has several power sources. The preferred source is normal AC power input, which is converted into DC then inverted to AC and applied to the loads. On loss of the normal AC power supply, UPS loads will continue to be powered by the inverter, from the battery. This transition will occur without interruption of power to the UPS loads. Another power source (the maintenance supply or bypass AC) is also available to provide power to the UPS loads if the normal and battery sources are unavailable, or if the UPS will be shut down. This system consists of breakers, cables, electrical penetrations, raceways, junction boxes, and transformers.

This system is in scope for license renewal for the following reasons:

- It performs a safety-related function per 10 CFR 54.4(a)(1).
- It contains SCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

USAR Reference(s)

More information about the UPS Distribution System can be found in USAR Section 8.3.1.

License Renewal Drawings

None (see Components Subject to an AMR below)

Components Subject to an AMR

Electrical components requiring an AMR for the UPS Distribution System are evaluated in Section 2.5.C, NMPNS Electrical Commodities. Supports for electrical components are evaluated in Section 2.4.C.1. There are no other components subject to an AMR for this system.

2.5.C NMPNS ELECTRICAL COMMODITIES

This section presents the results of the screening process for electrical components evaluated as commodities. The list of electrical components subject to an AMR was determined on a plant-wide basis by compiling a list of all electrical component types installed in the plant, then applying the screening criteria of 10 CFR 54 to determine those component types subject to an AMR. All passive electrical components were considered to be within the scope of license renewal. Individual circuits were not evaluated to determine whether they were in scope. Furthermore, for many of the component types (e.g. cable), it was not possible to determine which system(s) applied to each component type. The resulting list is an encompassing list of component types, not individual components. For example, cable is listed as a component type. After applying the screening criteria discussed in Section 2.1.5.4, including NEI 95-10, the following electrical commodities were identified:

- Cables and Connectors (Section 2.5.C.1)
- Non-Segregated/Switchyard Bus (Section 2.5.C.2)
- Containment Electrical Penetrations (Section 2.5.C.3)
- Switchyard Components (Section 2.5.C.4)

As noted in Section 2.1.5.4, Electrical and I&C components associated with the 10 CFR 50.49 program (EQ) are replaced on a specified interval based on a qualified life. Therefore, components in the EQ program do not meet the "long-lived" criteria of 10 CFR 54.21(a)(1)(ii). They are "short-lived" per the regulatory definition and are not subject to AMR.

2.5.C.1 CABLES AND CONNECTORS

Description

The components addressed in this commodity are electrical cables, connectors, splices, terminal blocks, and fuse blocks. Cables are identified on a plant-wide basis, and are not identified as being associated with a particular system. Cables and their associated connectors perform the function of providing electrical continuity to specified sections of an electrical circuit to deliver voltage, current and signals to various equipment and components throughout the plant to enable them to perform their intended functions.

USAR Reference(s)

More information about Cables and Connectors can be found in NMP1 USAR Section IX.B.3 and NMP2 USAR Section 8.3.1.1.4.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Cables and Connectors and their intended functions are shown in Table 2.5.C.1-1. The AMR results for these component types are provided in Table 3.6.2.C-1.

Table 2.5.C.1-1
Cables and Connectors

Component Type	Intended Functions
Conductor insulation for electrical cables and connectors	Electrical Continuity
Conductor insulation for electrical cables used in circuits that are sensitive to reduction in conductor insulation resistance (IR)	Electrical Continuity
Fuse Holders (not part of a larger assembly)	Electrical Continuity

2.5.C.2 NON-SEGREGATED/SWITCHYARD BUS

Description

The components evaluated in this commodity encompass the electrical Switchyard and Non-Segregated busses, as well as their associated insulators. Electrical busses perform the function of providing electrical continuity to specified sections of an electrical circuit voltage and current to various equipment and components throughout the plant to enable them to perform their intended functions. The intended function of the insulators is electrical insulation and NSR functional support through separation of busses and conductors from other components and structures.

USAR Reference(s)

More information about Non-Segregated/Switchyard Bus can be found in NMP1 USAR Section IX.B and NMP2 USAR Section 8.3.1.1.2.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Non-Segregated/Switchyard Bus and their intended functions are shown in Table 2.5.C.2-1. The AMR results for these component types are provided in Table 3.6.2.C-2.

Table 2.5.C.2-1
Non-Segregated/Switchyard Bus

Component Type	Intended Functions
Insulators	Insulate (Electrical)

Component Type	Intended Functions
Non-Segregated Bus	Electrical Continuity
Switchyard Bus	Electrical Continuity

2.5.C.3 CONTAINMENT ELECTRICAL PENETRATIONS

Description

The components evaluated in this commodity encompass the non-EQ electrical penetrations that form part of the containment pressure boundary. They also provide electrical continuity to specified sections of an electrical circuit to deliver voltage, current and signals across the containment boundary (either continuously or intermittently) to power various equipment and components throughout the plant to enable them to perform their intended functions. An electrical penetration provides an electrical connection between two sections of the Electrical/I&C circuit. The pigtail at each end of the penetration is connected to the field cable in various ways and is included in this evaluation. The connector or connection method is included in the Cables and Connectors Commodity Group (Section 2.5.C.1). The structural steel portion of the primary containment electrical penetrations is evaluated in the NMP1 Primary Containment Structure (Section 2.4.A.1) and the NMP2 Primary Containment Structure (Section 2.4.B.1).

USAR Reference(s)

More information about the Containment Electrical Penetrations can be found in NMP1 USAR Section IX.B.3.2 and NMP2 USAR Section 8.3.1.1.5.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Containment Electrical Penetrations and their intended functions are shown in Table 2.5.C.3-1. The AMR results for these component types are provided in Table 3.6.2.C-3.

Table 2.5.C.3-1
Containment Electrical Penetrations

Component Type	Intended Functions
Electrical Penetrations	Electrical Continuity Pressure Boundary

2.5.C.4 SWITCHYARD COMPONENTS

Description

The Switchyard components commodity was developed to address the addition of the 115KV switchyards for SBO recovery to the scope of license renewal. The components subject to AMR within the yard are the transmission conductors and the insulators and connectors associated with them. Cables, connectors, and busbars are evaluated in their respective commodity groups. Switchyard transmission conductors and associated connectors perform the function of providing electrical connections to specified sections of an electrical circuit to deliver voltage, current and signals to various equipment and components throughout the switchyard to enable them to perform their intended functions. The intended function of the high-voltage insulators is electrical insulation and NSR functional support through separation of the busses and conductors from other components and structures.

USAR Reference(s)

More information about Switchyard Components can be found in NMP1 USAR Section IX.B and NMP2 USAR Section 8.2.

License Renewal Drawings

None

Components Subject to an AMR

The component types requiring an AMR for the Switchyard Components and their intended functions are shown in Table 2.5.C.4-1. The AMR results for these component types are provided in Table 3.6.2.C-4.

Table 2.5.C.4-1
Switchyard Components

Component Type	Intended Functions
High Voltage Insulators	Insulate (Electrical)
Transmission Conductors	Electrical Continuity
Transmission Conductor Connectors	Electrical Continuity

TABLE OF CONTENTS

3.0 AGING MANAGEMENT REVIEW RESULTS 3.0-1

3.1 AGING MANAGEMENT OF REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEMS 3.1-1

3.1.2.A NMP1 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.1-4

3.1.2.A.1 NMP1 Reactor Pressure Vessel 3.1-4

3.1.2.A.2 NMP1 Reactor Pressure Vessel Internals 3.1-6

3.1.2.A.3 NMP1 Reactor Pressure Vessel Instrumentation System.. 3.1-7

3.1.2.A.4 NMP1 Reactor Recirculation System 3.1-8

3.1.2.A.5 NMP1 Control Rod Drive System 3.1-9

3.1.2.B NMP2 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.1-11

3.1.2.B.1 NMP2 Reactor Pressure Vessel 3.1-11

3.1.2.B.2 NMP2 Reactor Pressure Vessel Internals 3.1-13

3.1.2.B.3 NMP2 Reactor Pressure Vessel Instrumentation System 3.1-14

3.1.2.B.4 NMP2 Reactor Recirculation System 3.1-15

3.1.2.B.5 NMP2 Control Rod Drive System 3.1-17

3.2 AGING MANAGEMENT OF ENGINEERED SAFETY FEATURES 3.2-1

3.2.2.A NMP1 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.2-3

3.2.2.A.1 NMP1 Containment Spray System 3.2-3

3.2.2.A.2 NMP1 Core Spray System 3.2-5

3.2.2.A.3 NMP1 Emergency Cooling System 3.2-6

3.2.2.B NMP2 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.2-8

3.2.2.B.1 NMP2 Hydrogen Recombiner System 3.2-8

3.2.2.B.2 NMP2 High Pressure Core Spray System 3.2-9

3.2.2.B.3 NMP2 Low Pressure Core Spray System 3.2-11

3.2.2.B.4 NMP2 Reactor Core Isolation Cooling System 3.2-12

3.2.2.B.5 NMP2 Residual Heat Removal System 3.2-14

3.2.2.B.6 NMP2 Standby Gas Treatment System 3.2-16

3.3. AGING MANAGEMENT OF AUXILIARY SYSTEMS 3.3-1

3.3.1 Introduction 3.3-1

3.3.2 Results 3.3-4

3.3.2.A NMP1 Materials, Environments, Aging Effects Requiring Management and Aging Management Programs 3.3-12

3.3.2.A.1 NMP1 Circulating Water System....3.3-12
3.3.2.A.2 NMP1 City water System....3.3-13
3.3.2.A.3 NMP1 Compressed Air Systems....3.3-14
3.3.2.A.4 NMP1 Containment Systems....3.3-16
3.3.2.A.5 NMP1 Control Room HVAC System....3.3-18
3.3.2.A.6 NMP1 Diesel Generator Building Ventilation System....3.3-19
3.3.2.A.7 NMP1 Emergency Diesel Generator System....3.3-20
3.3.2.A.8 NMP1 Fire Detection and Protection System....3.3-21
3.3.2.A.9 NMP1 Hydrogen Water Chemistry System....3.3-23
3.3.2.A.10 NMP1 Liquid Poison System....3.3-24
3.3.2.A.11 NMP1 Miscellaneous Non Contaminated Vents and Drains System....3.3-25
3.3.2.A.12 NMP1 Neutron Monitoring System....3.3-26
3.3.2.A.13 NMP1 Radioactive Waste Disposal Building HVAC System....3.3-27
3.3.2.A.14 NMP1 Radioactive Waste System....3.3-28
3.3.2.A.15 NMP1 Reactor Building Closed Loop Cooling Water System....3.3-29
3.3.2.A.16 NMP1 Reactor Building HVAC System....3.3-31
3.3.2.A.17 NMP1 Reactor Water Cleanup System....3.3-32
3.3.2.A.18 NMP1 Sampling System....3.3-34
3.3.2.A.19 NMP1 Service Water System....3.3-36
3.3.2.A.20 NMP1 Shutdown Cooling System....3.3-37
3.3.2.A.21 NMP1 Spent Fuel Pool Filtering and Cooling System....3.3-38
3.3.2.A.22 NMP1 Turbine Building Closed Loop Cooling Water System....3.3-40
3.3.2.A.23 NMP1 Turbine Building HVAC System....3.3-41
3.3.2.A.24 NMP1 Electric Steam Boiler System....3.3-42
3.3.2.A.25 NMP1 Makeup Demineralizer SYstem....3.3-43
3.3.2.B NMP2 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS....3.3-44
3.3.2.B.1 NMP2 Air Startup - Standby Diesel Generator System....3.3-44
3.3.2.B.2 NMP2 Alternate Decay Heat Removal System....3.3-45
3.3.2.B.3 NMP2 Auxiliary Service Building HVAC System....3.3-46
3.3.2.B.4 NMP2 Chilled Water Ventilation System....3.3-47
3.3.2.B.5 NMP2 Compressed Air Systems....3.3-47
3.3.2.B.6 NMP2 Containment Atmosphere Monitoring System....3.3-48
3.3.2.B.7 NMP2 Containment Leakage Monitoring System....3.3-49
3.3.2.B.8 NMP2 Control Building Chilled Water System....3.3-50
3.3.2.B.9 NMP2 Control Building HVAC System....3.3-51
3.3.2.B.10 NMP2 Diesel Generator Building Ventilation System....3.3-52

3.3.2.B.11 NMP2 Domestic Water System....................3.3-53
3.3.2.B.12 NMP2 Engine-Driven Fire Pump Fuel Oil System 3.3-54
3.3.2.B.13 NMP2 Fire Detection and Protection System...................3.3-55
3.3.2.B.14 NMP2 Floor and Equipment Drains System 3.3-57
3.3.2.B.15 NMP2 Generator Standby Lube Oil System 3.3-58
3.3.2.B.16 NMP2 Glycol Heating System....................3.3-59
3.3.2.B.17 NMP2 Hot Water Heating System....................3.3-59
3.3.2.B.18 NMP2 Makeup Water System....................3.3-60
3.3.2.B.19 NMP2 Neutron Monitoring System 3.3-61
3.3.2.B.20 NMP2 Primary Containment Purge System....................3.3-62
3.3.2.B.21 NMP2 Process Sampling System 3.3-63
3.3.2.B.22 NMP2 Reactor Building Closed Loop Cooling Water69 System 3.3-64
3.3.2.B.23 NMP2 Reactor Building HVAC System....................3.3-65
3.3.2.B.24 NMP2 Reactor Water Cleanup System....................3.3-66
3.3.2.B.25 NMP2 Seal Water System 3.3-68
3.3.2.B.26 NMP2 Service Water System....................3.3-68
3.3.2.B.27 NMP2 Spent Fuel Pool Cooling and Cleanup System.....3.3-69
3.3.2.B.28 NMP2 Standby Diesel Generator Fuel Oil System 3.3-70
3.3.2.B.29 NMP2 Standby Diesel Generator Protection (Generator) System 3.3-71
3.3.2.B.30 NMP2 Standby Liquid Control System....................3.3-73
3.3.2.B.31 NMP2 Yard Structures Ventilation System 3.3-74
3.3.2.B.32 NMP2 Radiation Monitoring System 3.3-75
3.3.2.B.33 NMP2 Aux Boiler System....................3.3-76
3.3.2.B.34 NMP2 Circulating Water System....................3.3-77
3.3.2.B.35 NMP2 Makeup Water Treatement System 3.3-78
3.3.2.B.36 NMP2 Radioactive Liquid Waste Management System...3.3-79
3.3.2.B.37 NMP2 Roof Drainage System....................3.3-80
3.3.2.B.38 NMP2 Sanitary Drains and Disposal System....................3.3-81
3.3.2.B.39 NMP2 Service Water Chemical Treatment System 3.3-82
3.3.2.B.40 NMP2 Turbine Building Closed Loop Cooling Water System 3.3-83
3.3.3 TIME-LIMITED AGING ANALYSES 3.3-84
3.3.4 CONCLUSIONS 3.3-84

3.4 AGING MANAGEMENT OF STEAM AND POWER CONVERSION SYSTEMS 3.4-1
3.4.1 INTRODUCTION....................3.4-1
3.4.2 RESULTS....................3.4-2

3.4.2.A NMP1 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.4-4
3.4.2.A.1 NMP1 Condensate and Condensate Transfer System 3.4-4
3.4.2.A.2 NMP1 Feedwater/High Pressure Coolant Injection System 3.4-6
3.4.2.A.3 NMP1 Main Generator and Auxiliary System 3.4-7
3.4.2.A.4 NMP1 Main Steam System 3.4-8
3.4.2.A.5 NMP1 Condenser Air Removal and Off-Gas System 3.4-10
3.4.2.A.6 NMP1 Main Turbine and Auxiliary System 3.4-11
3.4.2.A.7 NMP1 Moisture Separator Reheater Steam System 3.4-12
3.4.2.B NMP2 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.4-13
3.4.2.B.1 NMP2 Main Condenser Air Removal System 3.4-13
3.4.2.B.2 NMP2 Condensate System 3.4-14
3.4.2.B.3 NMP2 Feedwater System 3.4-15
3.4.2.B.4 NMP2 Main Steam System 3.4-16
3.4.2.B.5 NMP2 Moisture Separator and Reheater System 3.4-18
3.4.2.B.6 NMP2 Extraction Steam and Feedwater Heater Drain System 3.4-19
3.4.2.B.7 NMP2 Turbine Main System 3.4-20
3.4.3 TIME-LIMITED AGING ANALYSES 3.4-21
3.4.4 CONCLUSIONS 3.4-21

3.5 AGING MANAGEMENT OF STRUCTURES AND COMPONENT SUPPORTS 3.5-1
3.5.1 INTRODUCTION 3.5-1
3.5.2 RESULTS 3.5-3
3.5.2.A NMP1 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.5-7
3.5.2.A.1 NMP1 Primary Containment Structure 3.5-7
3.5.2.A.2 NMP1 Reactor Building 3.5-9
3.5.2.A.3 NMP1 Essential Yard Structures 3.5-10
3.5.2.A.4 NMP1 Fuel Handling System 3.5-12
3.5.2.A.5 NMP1 Material Handling System 3.5-13
3.5.2.A.6 NMP1 Offgas Building 3.5-14
3.5.2.A.7 NMP1 Radwaste Solidification and Storage Building 3.5-15
3.5.2.A.8 NMP1 Screen and Pump House Building 3.5-16
3.5.2.A.9 NMP1 Turbine Building 3.5-17
3.5.2.A.10 NMP1 Vent Stack 3.5-19
3.5.2.A.11 NMP1 Waste Disposal Building 3.5-20
3.5.2.B NMP2 MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.5-21

3.5.2.B.1 NMP2 Primary Containment Structure 3.5-21
3.5.2.B.2 NMP2 Reactor Building 3.5-23
3.5.2.B.3 NMP2 Auxiliary Service Building 3.5-24
3.5.2.B.4 NMP2 Control Room Building 3.5-25
3.5.2.B.5 NMP2 Diesel Generator Building 3.5-26
3.5.2.B.6 NMP2 Essential Yard Structures 3.5-28
3.5.2.B.7 NMP2 Fuel Handling System 3.5-29
3.5.2.B.8 NMP2 Main Stack 3.5-31
3.5.2.B.9 NMP2 Material Handling System 3.5-32
3.5.2.B.10 NMP2 Radwaste Building 3.5-33
3.5.2.B.11 NMP2 Screenwell Building 3.5-34
3.5.2.B.12 NMP2 Standby Gas Treatment Building 3.5-35
3.5.2.B.13 NMP2 Turbine Building 3.5-36
3.5.2.C COMMODITY MATERIALS, ENVIRONMENTS, AGING EFFECTS REQUIRING MANAGEMENT AND AGING MANAGEMENT PROGRAMS 3.5-38
3.5.2.C.1 Component Supports 3.5-38
3.5.2.C.2 Fire Stops and Seals 3.5-39
3.5.3 TIME-LIMITED AGING ANALYSES 3.5-40
3.5.4 CONCLUSIONS 3.5-41

3.6 AGING MANAGEMENT OF ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS 3.6-1
3.6.1 INTRODUCTION 3.6-1
3.6.2 RESULTS 3.6-1
3.6.2.1 Materials, Environments, Aging Effects Requiring Management and Aging Management Programs 3.6-2
3.6.3 TIME-LIMITED AGING ANALYSES 3.6-6
3.6.4 CONCLUSIONS 3.6-6

4.0 TIME-LIMITED AGING ANALYSES 4.1-1

4.1 IDENTIFICATION OF TLAAS 4.1-1
4.1.1 PROCESS OVERVIEW 4.1-2
4.1.2 IDENTIFICATION OF EXEMPTIONS 4.1-2

4.2 REACTOR VESSEL NEUTRON EMBRITTLEMENT ANALYSIS 4.2-1
4.2.1 Upper-Shelf Energy 4.2-1
4.2.2 Pressure - Temperature (P – T) limits 4.2-10
4.2.3 Elimination of Circumferential Weld Inspection (NMP 1 ONLY) 4.2-14
4.2.4 Axial Weld Failure Probability 4.2-17

4.3 METAL FATIGUE ANALYSIS 4.3-1
4.3.1 Reactor Vessel Fatigue Analysis 4.3-6
4.3.2 ASME Section III Class 1 Piping and Components Fatigue Analysis (NMP2 Only) 4.3-10
4.3.3 Feedwater (FWS) Nozzle and Control Rod Drive Return Line (CRDRL) Nozzle Fatigue and Cracking Analyses 4.3-12
4.3.4 Non-ASME Section III Class 1 Piping and Components Fatigue Analysis 4.3-15
4.3.5 Reactor Vessel Internals Fatigue Analysis 4.3-17
4.3.6 Environmentally Assisted Fatigue 4.3-21
4.3.7 Fatigue of the Emergency Condenser (NMP1 only) 4.3-22

4.4 ENVIRONMENTAL QUALIFICATION (EQ) 4.4-1
4.4.1 ELECTRICAL EQUIPMENT EQ 4.4-1
4.4.2 MECHANICAL EQUIPMENT EQ (NMP2 ONLY) 4.4-2

4.5 CONCRETE CONTAINMENT TENDON PRESTRESS ANALYSIS 4.5-1

4.6 CONTAINMENT LINER PLATE, METAL CONTAINMENTS, AND PENETRATIONS FATIGUE ANALYSIS 4.6-1
4.6.1 Torus Shell and Vent System Fatigue Analysis (NMP1 only) 4.6-1
4.6.2 Torus Attached Piping Analysis (NMP1 only) 4.6-2
4.6.3 Torus Wall Thickness (NMP1 only) 4.6-6
4.6.4 Containment Liner Analysis (NMP2 only) 4.6-7
4.6.5 Fatigue of Primary Containment Penetrations 4.6-10

4.7 OTHER PLANT-SPECIFIC TLAAS 4.7-1
4.7.1 RPV Biological Shield (NMP2 Only) 4.7-1
4.7.2 Main Steam Isolation Valve Corrosion Allowance (NMP2 only) 4.7-3
4.7.3 Stress Relaxation of Core Plate Hold-Down Bolts (NMP2 only) 4.7-4
4.7.4 Reactor Vessel and Reactor Vessel Closure Head Weld Flaw Evaluations (NMP1 only) 4.7-6

4.8 REFERENCES 4.8-1

A0 INTRODUCTION A0-1
A1 APPENDIX A1 – NMP1 UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR) SUPPLEMENT A1-1
A1.1 AGING MANAGEMENT PROGRAMS A1-1
A1.1.1 10 CFR 50 Appendix J Program A1-1
A1.1.2 ASME Section XI Inservice Inspection (Subsection IWE) Program A1-1
A1.1.3 ASME Section XI Inservice Inspection (Subsection IWF) Program A1-2

A1.1.4 ASME Section XI Inservice Inspection (Subsections IWB, IWC, IWD) Program A1-2
A1.1.5 Boraflex Monitoring Program A1-2
A1.1.6 Buried Piping and Tanks Inspection Program A1-3
A1.1.7 BWR Feedwater Nozzle Program A1-3
A1.1.8 BWR Penetrations Program A1-4
A1.1.9 BWR Reactor Water Cleanup System Program A1-4
A1.1.10 BWR Stress Corrosion Cracking Program A1-4
A1.1.11 BWR Vessel ID Attachment Welds Program A1-4
A1.1.12 BWR Vessel Internals Program A1-5
A1.1.13 Closed-Cycle Cooling Water System Program A1-7
A1.1.14 Compressed Air Monitoring Program A1-8
A1.1.15 Environmental Qualification Program A1-9
A1.1.16 Fatigue Monitoring Program A1-9
A1.1.17 Fire Protection Program A1-9
A1.1.18 Fire Water System Program A1-10
A1.1.19 Flow-Accelerated Corrosion Program A1-11
A1.1.20 Fuel Oil Chemistry Program A1-11
A1.1.21 Fuse Holder Inspection Program A1-12
A1.1.22 Inspection of Overhead Heavy Load and Light Load Handling Systems Program A1-13
A1.1.23 Masonry Wall Program A1-13
A1.1.24 Non-EQ Electrical Cables and Connections Program A1-13
A1.1.25 Non-EQ Electrical Cables and Connections Used in Instrumentation ..... Circuits Program A1-14
A1.1.26 Non-EQ Inaccessible Medium Voltage Cables Program (DELETED) .. A1-14
A1.1.27 Non-Segregated Bus Inspection Program A1-15
A1.1.28 One-Time Inspection Program A1-15
A1.1.29 Open-Cycle Cooling Water System Program A1-16
A1.1.30 Preventive Maintenance Program A1-16
A1.1.31 Reactor Head Closure Studs Program A1-17
A1.1.32 Reactor Vessel Surveillance Program A1-17
A1.1.33 Selective Leaching of Materials Program A1-18
A1.1.34 Structures Monitoring Program A1-18
A1.1.35 Systems Walkdown Program A1-19
A1.1.36 Torus Corrosion Monitoring Program A1-19
A1.1.37 Water Chemistry Control Program A1-20
A1.1.38 Bolting Integrity Program A1-20
A1.1.39 BWR Control Rod Drive Return Line (CRDRL) Nozzle Program A1-21
A1.1.40 Protective Coating Monitoring and Maintenance Program A1-22

A1.1.41 Non-EQ Electrical Cable Metallic Connections Inspection Program..... A1-23
A1.2 TIME-LIMITED AGING ANALYSIS SUMMARIES A1-23
A1.2.1 Reactor Vessel Neutron Embrittlement Analysis A1-23
A1.2.1.1 Upper-Shelf Energy A1-24
A1.2.1.2 Pressure - Temperature (P – T) Limits A1-24
A1.2.1.3 Elimination of Circumferential Weld Inspection.......... A1-25
A1.2.1.4 Axial Weld Failure Probability A1-25
A1.2.2 Metal Fatigue Analysis A1-26
A1.2.2.1 Reactor Vessel Fatigue Analysis A1-27
A1.2.2.2 Feedwater (FWS) Nozzle and Control Rod Drive Return Line (CRDRL) Nozzle Fatigue and Cracking Analyses.......... A1-27
A1.2.2.3 Non-ASME Section III Class 1 Piping and Components Fatigue Analysis.......... A1-28
A1.2.2.4 Reactor Vessel Internals Fatigue Analysis A1-29
A1.2.2.5 Environmentally Assisted Fatigue.......... A1-29
A1.2.2.6 Fatigue of the Emergency Condenser A1-30
A1.2.3 Environmental Qualification (EQ).......... A1-30
A1.2.3.1 Electrical Equipment EQ A1-31
A1.2.4 Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis A1-31
A1.2.4.1 Torus Shell and Vent System Fatigue Analysis.......... A1-31
A1.2.4.2 Torus Attached Piping Analysis A1-32
A1.2.4.3 Torus Wall Thickness.......... A1-32
A1.2.4.4 Fatigue of Primary Containment Penetrations.......... A1-33
A1.2.5 Other Plant-Specific TLAAs A1-33
A1.2.5.1 Reactor Vessel and Reactor Vessel Closure Head Weld Flaw Evaluations.......... A1-33
A1.3 REFERENCES.......... A1-34
A1.4 COMMITMENTS.......... A1-36
A1.5 GENERIC QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR LICENSE RENEWAL A1-43

A2 APPENDIX A2 – NMP2 UPDATED SAFETY ANALYSIS REPORT (USAR) SUPPLEMENT.......... A2-1

A2.1 AGING MANAGEMENT PROGRAMS A2-1
A2.1.1 10 CFR 50 Appendix J Program A2-1
A2.1.2 ASME Section XI Inservice Inspection (Subsection IWE) Program.......... A2-1
A2.1.3 ASME Section XI Inservice Inspection (Subsection IWF) Program.......... A2-2
A2.1.4 ASME Section XI Inservice Inspection (Subsection IWL) Program.......... A2-2
A2.1.5 ASME Section XI Inservice Inspection (Subsections IWB, IWC, IWD) Program A2-2

A2.1.6 Boraflex Monitoring Progam (NOT USED) A2-3
A2.1.7 Buried Piping and Tanks Inspection Program A2-3
A2.1.8 BWR Feedwater Nozzle Program A2-3
A2.1.9 BWR Penetrations Program A2-4
A2.1.10 BWR Reactor Water Cleanup System Program A2-4
A2.1.11 BWR Stress Corrosion Cracking Program A2-4
A2.1.12 BWR Vessel ID Attachment Welds Program A2-4
A2.1.13 BWR Vessel Internals Program A2-5
A2.1.14 Closed-Cycle Cooling Water System Program A2-7
A2.1.15 Environmental Qualification Program A2-8
A2.1.16 Fatigue Monitoring Program A2-8
A2.1.17 Fire Protection Program A2-8
A2.1.18 Fire Water System Program A2-9
A2.1.19 Flow-Accelerated Corrosion Program A2-10
A2.1.20 Fuel Oil Chemistry Program A2-10
A2.1.21 Fuse Holder Inspection Program A2-11
A2.1.22 Inspection of Overhead Heavy Load and Light Load Handling Systems Program A2-12
A2.1.23 Masonry Wall Program A2-12
A2.1.24 Non-EQ Electrical Cables and Connections Program A2-12
A2.1.25 Non-EQ Electrical Cables and Connections Used in Instrumentation Circuits Program A2-13
A2.1.26 Non-EQ Inaccessible Medium Voltage Cables Program (DELETED) .. A2-13
A2.1.27 Non-Segregated Bus Inspection Program A2-14
A2.1.28 One-Time Inspection Program A2-14
A2.1.29 Open-Cycle Cooling Water System Program A2-15
A2.1.30 Preventive Maintenance Program A2-15
A2.1.31 Reactor Head Closure Studs Program A2-16
A2.1.32 Reactor Vessel Surveillance Program A2-16
A2.1.33 Selective Leaching of Materials Program A2-17
A2.1.34 Structures Monitoring Program A2-17
A2.1.35 Systems Walkdown Program A2-18
A2.1.36 Water Chemistry Control Program A2-19
A2.1.37 Bolting Integrity Program A2-19
A2.1.38 Protective Coating Monitoring and Maintenance Program A2-20
A2.1.39 Non-EQ Electrical Cable Metalic Connections Inspection Program...... A2-21
A2.1.40 Wooden Power Pole Inspection Program A2-21
A2.2 TIME-LIMITED AGING ANALYSES SUMMARIES A2-22
A2.2.1 Reactor Vessel Neutron Embrittlement Analysis A2-22
A2.2.1.1 Upper-Shelf Energy A2-22

A2.2.1.2 Pressure - Temperature (P – T) limits A2-23
A2.2.1.3 Axial Weld Failure Probability A2-23
A2.2.2 Metal Fatigue Analysis A2-24
A2.2.2.1 Reactor Vessel Fatigue Analysis A2-25
A2.2.2.2 ASME Section III Class 1 Piping and Components Fatigue Analysis A2-25
A2.2.2.3 Feedwater (FWS) Nozzle and Control Rod Drive Return Line (CRDRL) Nozzle Fatigue and Cracking Analyses A2-25
A2.2.2.4 Non-ASME Section III Class 1 Piping and Components Fatigue Analysis A2-26
A2.2.2.5 Reactor Vessel Internals Fatigue Analysis A2-26
A2.2.2.6 Environmentally Assisted Fatigue A2-27
A2.2.3 Environmental Qualification (EQ) A2-28
A2.2.3.1 Electrical Equipment EQ A2-28
A2.2.3.2 Mechanical Equipment EQ A2-28
A2.2.4 Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis A2-29
A2.2.4.1 Containment Liner Analysis A2-29
A2.2.4.2 Fatigue of Primary Containment Penetrations A2-29
A2.2.5 Other Plant-Specific TLAAs A2-30
A2.2.5.1 RPV Biological Shield A2-30
A2.2.5.2 Main Steam Isolation Valve Corrosion Allowance A2-30
A2.2.5.3 Stress Relaxation of Core Plate Hold-Down Bolts A2-30
A2.3 REFERENCES A2-31
A2.4 COMMITMENTS A2-33
A2.5 GENERIC QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR LICENSE RENEWAL A2-39

3.0 AGING MANAGEMENT REVIEW RESULTS 1

3.1 AGING MANAGEMENT OF REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEMS 1

3.2 AGING MANAGEMENT OF ENGINEERED SAFETY FEATURES 1

3.3 AGING MANAGEMENT OF AUXILIARY SYSTEMS 1

3.4 AGING MANAGEMENT OF STEAM AND POWER CONVERSION SYSTEMS .. 1

3.5 AGING MANAGEMENT OF STRUCTURES AND COMPONENT SUPPORTS... 1

3.6 AGING MANAGEMENT OF ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS 1

4.0 TIME-LIMITED AGING ANALYSES 1

4.1 IDENTIFICATION OF TLAAS 1

4.2 REACTOR VESSEL NEUTRON EMBRITTLEMENT ANALYSIS 1

4.3 METAL FATIGUE ANALYSIS 1

4.4 ENVIRONMENTAL QUALIFICATION (EQ) 1

4.5 CONCRETE CONTAINMENT TENDON PRESTRESS ANALYSIS 1

4.6 CONTAINMENT LINER PLATE, METAL CONTAINMENTS, AND PENETRATIONS FATIGUE ANALYSIS 1

4.7 OTHER PLANT-SPECIFIC TLAAS 1

4.8 REFERENCES 1

A0 INTRODUCTION 1

A1 APPENDIX A1 – NMP1 UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR) SUPPLEMENT 1

A1.1 AGING MANAGEMENT PROGRAMS 1

A1.1.1 1

A1.1.2 ASME Section XI Inservice Inspection (Subsection IWE) Program 1

A1.1.3 ASME Section XI Inservice Inspection (Subsection IWF) Program 2

A1.1.4 ASME Section XI Inservice Inspection (Subsections IWB, IWC, IWD) Program .. 2

A1.1.5 Boraflex Monitoring Program 2

A1.1.6 Buried Piping and Tanks Inspection Program 3

A1.1.7 BWR Feedwater Nozzle Program 3

A1.1.8 BWR Penetrations Program 4

A1.1.9 BWR Reactor Water Cleanup System Program 4

A1.1.10 BWR Stress Corrosion Cracking Program 4

A1.1.11 BWR Vessel ID Attachment Welds Program 4

A1.1.12 BWR Vessel Internals Program 5

A1.1.13 Closed-Cycle Cooling Water System Program....7

A1.2 TIME-LIMITED AGING ANALYSIS SUMMARIES 23

A1.3 REFERENCES 34

A1.4 COMMITMENTS 36

A1.5 GENERIC QUALITY ASSURANCE PROGRAM REQUIREMENT FOR LICENSE RENEWAL....43

A2 APPENDIX A2 – NMP2 UPDATED SAFETY ANALYSIS REPORT (USAR) SUPPLEMENT....1

A2.1 AGING MANAGEMENT PROGRAMS 1

A2.1.30 Preventive Maintenance Program 15

A2.2 TIME-LIMITED AGING ANALYSES SUMMARIES....22

A2.3 REFERENCES....31

A2.4 COMMITMENTS 33

A2.5 GENERIC QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR LICENSE RENEWAL 39

B1.0 1

B1.1 OVERVIEW 1

B1.2 METHOD OF DISCUSSION 1

B1.3 QUALITY ASSURANCE PROGRAM AND ADMINISTRATIVE CONTROLS 2

B1.4 OPERATING EXPERIENCE 3

B1.5 AGING MANAGEMENT PROGRAMS 3

B1.6 TIME LIMITED AGING ANALYSES AGING MANAGEMENT PROGRAMS 6

B2.0 AGING MANAGEMENT PROGRAMS 1

b2.1 Aging Management Programs 6

b2.1.1 ASME Section XI Inservice Inspection (Subsections IWB, IWC, IWD) Program ..6
b2.1.2 Water Chemistry Control Program 7
b2.1.3 Reactor Head Closure Studs Program 11
b2.1.4 BWR Vessel ID Attachment Welds Program 12
b2.1.5 BWR Feedwater Nozzle Program 12
b2.1.6 BWR Stress Corrosion Cracking Program 14
b2.1.7 BWR Penetrations Program 16
b2.1.8 BWR Vessel Internals Program 16
b2.1.9 Flow-Accelerated Corrosion Program 26
B2.1.10 Open-Cycle Cooling Water System Program 27
B2.1.11 Closed-Cycle Cooling Water System Program 29
b2.1.12 Boraflex Monitoring Program (NMP1 Only) 32
b2.1.13 Inspection of Overhead Heavy Load and Light Load Handling Systems Program 34
b2.1.14 Compressed Air Monitoring Program (NMP1 only) 35
b2.1.15 BWR Reactor Water Cleanup System Program 38
b2.1.16 Fire Protection Program 39
b2.1.17 Fire Water System Program 42
b2.1.18 Fuel Oil Chemistry Program 44
b2.1.19 Reactor Vessel Surveillance Program 46
b2.1.20 One-Time Inspection Program 49
b2.1.21 Selective Leaching of Materials Program 50
b2.1.22 Buried Piping and Tanks Inspection Program 51
b2.1.23 ASME Section XI Inservice Inspection (Subsection IWE) Program 52
b2.1.24 ASME Section XI Inservice Inspection (Subsection IWL) Program [Unit 2 ONLY] 53

b2.1.25 ASME Section XI Inservice Inspection (Subsection IWF) Program 55

b2.1.26 10 CFR 50 Appendix J Program 56

b2.1.27 Masonry Wall Program 58

b2.1.28 Structures Monitoring Program 58

b2.1.29 Non-EQ Electrical Cables and Connections Program 60

b2.1.30 Non-EQ Electrical Cables and connections Used in Instrumentation Circuits Program 61

b2.1.31 Deleted 64

b2.1.32 Preventive Maintenance Program 64

B2.1.33 Systems Walkdown Program 67

b2.1.34 Non-Segregated Bus Inspection Program 71

b2.1.35 Fuse Holder Inspection Program 75

b2.1.36 bolting integrity program 78

B2.1.37 BWR Control rod Drive Return Line (CRDRL) Nozzle Program..............80

B2.1.38 Protective coating monitoring and maintenance program 82

b2.1.39 NON-EQ ELECTRICAL CABLE METALLIC CONNECTIONS Inspection Program..............85

B3.0 TLAA EVALUATION OF AGING MANAGEMENT PROGRAMS UNDER 10 CFR 54.21(C)(1)(III) 1

B3.1 ENVIRONMENTAL QUALIFICATION PROGRAM 1

B3.2 FATIGUE MONITORING PROGRAM 3

B3.3 TORUS CORROSION MONITORING PROGRAM (NMP1 ONLY) 5

B4.0 REFERENCES 1

Appendix C Commodity Groups (Optional).............. C1-1

Appendix D Technical Specification Changes D1-1

LIST OF TABLES

Table 3.0-1 Environments 3.0-6

Table 3.0-2 Aging Effects Requiring Management 3.0-11

Table 3.1.1.A NMP1 Summary of Aging Management Programs for the Reactor Vessel, Internals, and Reactor Coolant Systems Evaluated in Chapter IV of NUREG-1801 .... 3.1-21

Table 3.1.1.B NMP2 Summary of Aging Management Programs for the Reactor Vessel, Internals, and Reactor Coolant Systems Evaluated in Chapter IV of NUREG-1801 .... 3.1-32

Table 3.1.2.A-1 Reactor Vessel, Internals, and Reactor Coolant System NMP1 Reactor Pressure Vessel – Summary of Aging Management Evaluation 3.1-43

Table 3.1.2.A-2 Reactor Vessel, Internals, and Reactor Coolant System NMP1 Reactor Pressure Vessel Internals – Summary of Aging Management Evaluation 3.1-51

Table 3.1.2.A-3 Reactor Vessel, Internals, and Reactor Coolant System NMP1 Reactor Vessel Instrumentation System – Summary of Aging Management Evaluation 3.1-57

Table 3.1.2.A-4 Reactor Vessel, Internals, and Reactor Coolant System NMP1 Reactor Recirculation System – Summary of Aging Management Evaluation 3.1-60

Table 3.1.2.A-5 Reactor Vessel, Internals, and Reactor Coolant System NMP1 Control Rod Drive System – Summary of Aging Management Evaluation 3.1-65

Table 3.1.2.B-1 Reactor Vessel, Internals, and Reactor Coolant System NMP2 Reactor Pressure Vessel – Summary of Aging Management Evaluation 3.1-72

Table 3.1.2.B-2 Reactor Vessel, Internals, and Reactor Coolant System NMP2 Reactor Pressure Vessel Internals – Summary of Aging Management Evaluation 3.1-81

Table 3.1.2.B-3 Reactor Vessel, Internals, and Reactor Coolant System NMP2 Reactor Pressure Vessel Instrumentation System – Summary of Aging Management Evaluation 3.1-90

Table 3.1.2.B-4 Reactor Vessel, Internals, and Reactor Coolant System NMP2 Reactor Recirculation System – Summary of Aging Management Evaluation 3.1-96

Table 3.1.2.B-5 Reactor Vessel, Internals, and Reactor Coolant System NMP2 Control Rod Drive System – Summary of Aging Management Evaluation 3.1-105

Table 3.2.1.A NMP1 Summary of Aging Management Programs for the Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801 ....3.2-18

Table 3.2.1.B NMP2 Summary of Aging Management Programs for the Engineered Safety Features Systems Evaluated in Chapter V of NUREG-1801 ....3.2-26

Table 3.2.2.A-1 Engineered Safety Features Systems NMP1 Containment Spray System – Summary of Aging Management Evaluation 3.2-34

Table 3.2.2.A-2 Engineered Safety Features Systems NMP1 Core Spray System – Summary of Aging Management Evaluation 3.2-41

Table 3.2.2.A-3 Engineered Safety Features Systems NMP1 Emergency Cooling System – Summary of Aging Management Evaluation 3.2-50

Table 3.2.2.B-1 Engineered Safety Features Systems NMP2 Hydrogen Recombiner System – Summary of Aging Management Evaluation 3.2-67

Table 3.2.2.B-2 Engineered Safety Features Systems NMP2 High Pressure Core Spray System – Summary of Aging Management Evaluation 3.2-70

Table 3.2.2.B-3 Engineered Safety Features Systems NMP2 Low Pressure Core Spray System – Summary of Aging Management Evaluation 3.2-76

Table 3.2.2.B-4 Engineered Safety Features Systems NMP2 Reactor Core Isolation Cooling System – Summary of Aging Management Evaluation 3.2-84

Table 3.2.2.B-5 Engineered Safety Features Systems NMP2 Residual Heat Removal System – Summary of Aging Management Evaluation 3.2-97

Table 3.2.2.B-6 Engineered Safety Features Systems NMP2 Standby Gas Treatment System – Summary of Aging Management Evaluation ..3.2-107

Table 3.3.1.A NMP1 Summary of Aging Management Programs for the Auxiliary Systems Evaluated in Chapter VII of NUREG-1801 ....3.3-85

Table 3.3.1.B NMP2 Summary of Aging Management Programs for the Auxiliary Systems Evaluated in Chapter VII of NUREG-1801 ....3.3-97

Table 3.3.2.A-1	Auxiliary Systems NMP1 Circulating Water System – Summary of Aging Management Evaluation....3.3-108
Table 3.3.2.A-2	Auxiliary Systems NMP1 City Water System – Summary of Aging Management Evaluation....3.3-111
Table 3.3.2.A-3	Auxiliary Systems NMP1 Compressed Air System – Summary of Aging Management Evaluation....3.3-113
Table 3.3.2.A-4	Auxiliary Systems NMP1 Containment Systems – Summary of Aging Management Evaluation....3.3-122
Table 3.3.2.A-5	Auxiliary Systems NMP1 Control Room HVAC System – Summary of Aging Management Evaluation....3.3-128
Table 3.3.2.A-6	Auxiliary Systems NMP1 Diesel Generator Building Ventilation System – Summary of Aging Management Evaluation....3.3-132
Table 3.3.2.A-7	Auxiliary Systems NMP1 Emergency Diesel Generator System – Summary of Aging Management Evaluation....3.3-133
Table 3.3.2.A-8	Auxiliary Systems NMP1 Fire Detection and Protection System – Summary of Aging Management Evaluation....3.3-141
Table 3.3.2.A-9	Auxiliary Systems NMP1 Hydrogen Water Chemistry System – Summary of Aging Management Evaluation....3.3-146
Table 3.3.2.A-10	Auxiliary Systems NMP1 Liquid Poison System – Summary of Aging Management Evaluation....3.3-147
Table 3.3.2.A-11	Auxiliary Systems NMP1 Miscellaneous Non Contaminated Vents and Drains System – Summary of Aging Management Evaluation.3.3-152
Table 3.3.2.A-12	Auxiliary Systems NMP1 Neutron Monitoring System – Summary of Aging Management Evaluation....3.3-153
Table 3.3.2.A-13	Auxiliary Systems NMP1 Radioactive Waste Solidification and Storage Building HVAC System – Summary of Aging Management Evaluation....3.3-154
Table 3.3.2.A-14	Auxiliary Systems NMP1 Radioactive Waste System – Summary of Aging Management Evaluation....3.3-155
Table 3.3.2.A-15	Auxiliary Systems NMP1 Reactor Building Closed Loop Cooling Water System – Summary of Aging Management Evaluation....3.3-162
Table 3.3.2.A-16	Auxiliary Systems NMP1 Reactor Building HVAC System – Summary of Aging Management Evaluation....3.3-170

Table 3.3.2.A-17 Auxiliary Systems NMP1 Reactor Water Cleanup System – Summary of Aging Management Evaluation 3.3-172

Table 3.3.2.A-18 Auxiliary Systems NMP1 Sampling System – Summary of Aging Management Evaluation 3.3-182

Table 3.3.2.A-19 Auxiliary Systems NMP1 Service Water System – Summary of Aging Management Evaluation 3.3-186

Table 3.3.2.A-20 Auxiliary Systems NMP1 Shutdown Cooling System – Summary of Aging Management Evaluation 3.3-190

Table 3.3.2.A-21 Auxiliary Systems NMP1 Spent Fuel Pool Filtering and Cooling System – Summary of Aging Management Evaluation 3.3-195

Table 3.3.2.A-22 Auxiliary Systems NMP1 Turbine Building Closed Loop Cooling Water System – Summary of Aging Management Evaluation 3.3-200

Table 3.3.2.A-23 Auxiliary Systems NMP1 Turbine Building HVAC System – Summary of Aging Management Evaluation 3.3-202

Table 3.3.2.A-24 Auxiliary Systems NMP1 Electric Steam Boiler Ssstem - Summary of Aging Management Evaluation 3.3-204

Table 3.3.2.A-25 Auxiliary Systems NMP1 Makeup and Demineralizer System - Summary of Aging Management Evaluation 3.3-206

Table 3.3.2.B-1 Auxiliary Systems NMP2 Air Startup Standby Diesel Generator System – Summary of Aging Management Evaluation 3.3-207

Table 3.3.2.B-2 Auxiliary Systems NMP2 Alternate Decay Heat Removal System – Summary of Aging Management Evaluation 3.3-210

Table 3.3.2.B-3 Auxiliary Systems NMP2 Auxiliary Service Building HVAC System – Summary of Aging Management Evaluation 3.3-212

Table 3.3.2.B-4 Auxiliary Systems NMP2 Chilled Water Ventilation System – Summary of Aging Management Evaluation 3.3-212

Table 3.3.2.B-5 Auxiliary Systems NMP2 Compressed Air Systems – Summary of Aging Management Evaluation 3.3-213

Table 3.3.2.B-6 Auxiliary Systems NMP2 Containment Atmosphere Monitoring System – Summary of Aging Management Evaluation 3.3-217

Table 3.3.2.B-7 Auxiliary Systems NMP2 Containment Leakage Monitoring System – Summary of Aging Management Evaluation 3.3-218

Table 3.3.2.B-8 Auxiliary Systems NMP2 Control Building Chilled Water System – Summary of Aging Management Evaluation 3.3-219

Table 3.3.2.B-9 Auxiliary Systems NMP2 Control Building HVAC System – Summary of Aging Management Evaluation 3.3-223

Table 3.3.2.B-10 Auxiliary Systems NMP2 Diesel Generator Building Ventilation System – Summary of Aging Management Evaluation 3.3-226

Table 3.3.2.B-11 Auxiliary Systems NMP2 Domestic Water System – Summary of Aging Management Evaluation...3.3-228

Table 3.3.2.B-12 Auxiliary Systems NMP2 Engine-Driven Fire Pump Fuel Oil System– Summary of Aging Management Evaluation 3.3-230

Table 3.3.2.B-13 Auxiliary Systems NMP2 Fire Detection and Protection System– Summary of Aging Management Evaluation 3.3-232

Table 3.3.2.B-14 Auxiliary Systems NMP2 Floor and Equipment Drains System – Summary of Aging Management Evaluation 3.3-237

Table 3.3.2.B-15 Auxiliary Systems NMP2 Generator Standby Lube Oil System – Summary of Aging Management Evaluation 3.3-245

Table 3.3.2.B-16 Auxiliary Systems NMP2 Glycol Heating System – Summary of Aging Management Evaluation...3.3-246

Table 3.3.2.B-17 Auxiliary Systems NMP2 Hot Water Heating System – Summary of Aging Management Evaluation...3.3-247

Table 3.3.2.B-18 Auxiliary Systems NMP2 Makeup Water System – Summary of Aging Management Evaluation...3.3-248

Table 3.3.2.B-19 Auxiliary Systems NMP2 Neutron Monitoring System – Summary of Aging Management Evaluation...3.3-249

Table 3.3.2.B-20 Auxiliary Systems NMP2 Primary Containment Purge System – Summary of Aging Management Evaluation 3.3-250

Table 3.3.2.B-21 Auxiliary Systems NMP2 Process Sampling System – Summary of Aging Management Evaluation...3.3-252

Table 3.3.2.B-22 Auxiliary Systems NMP2 Reactor Building Closed Loop Cooling Water System – Summary of Aging Management Evaluation.........3.3-255

Table 3.3.2.B-23 Auxiliary Systems NMP2 Reactor Building HVAC System – Summary of Aging Management Evaluation 3.3-257

Table 3.3.2.B-24 Auxiliary Systems NMP2 Reactor Water Cleanup System – Summary of Aging Management Evaluation 3.3-261

Table 3.3.2.B-25 Auxiliary Systems NMP2 Seal Water System – Summary of Aging Management Evaluation...3.3-270

Table 3.3.2.B-26	Auxiliary Systems NMP2 Service Water System – Summary of Aging Management Evaluation	3.3-271
Table 3.3.2.B-27	Auxiliary Systems NMP2 Spent Fuel Pool Cooling and Cleanup System – Summary of Aging Management Evaluation	3.3-274
Table 3.3.2.B-28	Auxiliary Systems NMP2 Standby Diesel Generator Fuel Oil System – Summary of Aging Management Evaluation	3.3-278
Table 3.3.2.B-29	Auxiliary Systems NMP2 Standby Diesel Generator Protection (Generator) System – Summary of Aging Management Evaluation	3.3-281
Table 3.3.2.B-30	Auxiliary Systems NMP2 Standby Liquid Control System – Summary of Aging Management Evaluation	3.3-285
Table 3.3.2.B-31	Auxiliary Systems NMP2 Yard Structures Ventilation System – Summary of Aging Management Evaluation	3.3-289
Table 3.3.2.B-32	Auxiliary Systems NMP2 Radiation Monitoring System - Summary of Aging Management Evaluation	3.3-291
Table 3.3.2.B-33	Auxiliary Systems NMP2 Auxiliary Boiler System - Summary of Aging Management Evaluation	3.3-292
Table 3.3.2.B-34	Auxiliary Systems NMP2 Circulating Water System - Summary of Aging Management Evaluation	3.3-299
Table 3.3.2.B-35	Auxiliary Systems NMP2 Makeup Water Treatment System - Summary of Aging Management Evaluation	3.3-300
Table 3.3.2.B-36	Auxiliary Systems NMP2 Radioactive Liquid Waste Management System - Summary of Aging Management Evaluation	3.3-301
Table 3.3.2.B-37	Auxiliary Systems NMP2 Roof Drainage System - Summary of Aging Management Evaluation	3.3-304
Table 3.3.2.B-38	Auxiliary Systems NMP2 Sanitary Drains and Disposal System - Summary of Aging Management Evaluation	3.3-305
Table 3.3.2.B-39	Auxiliary Systems NMP2 Service Water Chemical Treatment System - Summary of Aging Management Evaluation	3.3.-306
Table 3.3.2.B-40	Auxiliary Systems NMP2 Turbine Building Closed Loop Cooling Water System - Summary of Aging Management Evaluation	3.3-307
Table 3.4.1.A	NMP1 Summary of Aging Management Programs for the Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801	3.4-22

Table 3.4.1.B NMP2 Summary of Aging Management Programs for the Steam and Power Conversion Systems Evaluated in Chapter VIII of NUREG-1801 .... 3.4-26

Table 3.4.2.A-1 Steam and Power Conversion System NMP1 Condensate and Condensate Transfer System – Summary of Aging Management Evaluation 3.4-29

Table 3.4.2.A-2 Steam and Power Conversion System NMP1 Feedwater/High Pressure Coolant Injection System – Summary of Aging Management Evaluation 3.4-38

Table 3.4.2.A-3 Steam and Power Conversion System NMP1 Main Generator and Auxiliary System – Summary of Aging Management Evaluation 3.4-44

Table 3.4.2.A-4 Steam and Power Conversion System NMP1 Main Steam System – Summary of Aging Management Evaluation 3.4-45

Table 3.4.2.A-5 Steam and Power Conversion System NMP1 Condenser Air Removal and Off-Gas System - Summary of Aging Management Evaluation 3.4-50

Table 3.4.2.A-6 Steam and Power Conversion System NMP1 Main Turbine and Auxiliary Systems - Summary of Aging Management Evaluation 3.4-52

Table 3.4.2.A-7 Steam and Power Conversion System NMP1 Moisture Separator Reheater Steam System - Summary of Aging Management Evaluation 3.4-54

Table 3.4.2.B-1 Steam and Power Conversion System NMP2 Main Condenser Air Removal System – Summary of Aging Management Evaluation 3.4-56

Table 3.4.2.B-2 Steam and Power Conversion System NMP2 Condensate System – Summary of Aging Management Evaluation 3.4-58

Table 3.4.2.B-3 Steam and Power Conversion System NMP2 Feedwater System – Summary of Aging Management Evaluation 3.4-62

Table 3.4.2.B-4 Steam and Power Conversion System NMP2 Main Steam System – Summary of Aging Management Evaluation 3.4-66

Table 3.4.2.B-5 Steam and Power Conversion System NMP2 Moisture Separator and Reheater System – Summary of Aging Management Evaluation 3.4-74

Table 3.4.2.B-6 Steam and Power Conversion System NMP2 Extraction Steam and Feedwater Drain System - Summary of Aging Management Evaluation 3.4-76

Table 3.4.2.B-7 Steam and Power Conversion System NMP2 Turbine Main System Summary of Aging Management Evaluation 3.4-78

Table 3.5.1.A NMP1 Summary of Aging Management Programs for Structures and Component Supports Evaluated in Chapter II and III of NUREG-1801 .... 3.5-42

Table 3.5.1.B NMP2 Summary of Aging Management Programs for Structures and Component Supports Evaluated in Chapter II and III of NUREG-1801 .... 3.5-53

Table 3.5.2.A-1 Structures and Component Supports NMP1 Primary Containment Structure – Summary of Aging Management Evaluation 3.5-63

Table 3.5.2.A-2 Structures and Component Supports NMP1 Reactor Building – Summary of Aging Management Evaluation 3.5-69

Table 3.5.2.A-3 Structures and Component Supports NMP1 Essential Yard Structures – Summary of Aging Management Evaluation 3.5-73

Table 3.5.2.A-4 Structures and Component Supports NMP1 Fuel Handling System – Summary of Aging Management Evaluation 3.5-74

Table 3.5.2.A-5 Structures and Component Supports NMP1 Material Handling System – Summary of Aging Management Evaluation 3.5-75

Table 3.5.2.A-6 Structures and Component Supports NMP1 Offgas Building – Summary of Aging Management Evaluation 3.5-76

Table 3.5.2.A-7 Structures and Component Supports NMP1 Radwaste Solidification and Storage Building – Summary of Aging Management Evaluation 3.5-78

Table 3.5.2.A-8 Structures and Component Supports NMP1 Screen and Pump House Building – Summary of Aging Management Evaluation 3.5-80

Table 3.5.2.A-9 Structures and Component Supports NMP1 Turbine Building – Summary of Aging Management Evaluation 3.5-82

Table 3.5.2.A-10 Structures and Component Supports NMP1 Vent Stack – Summary of Aging Management Evaluation 3.5-84

Table 3.5.2.A-11 Structures and Component Supports NMP1 Waste Disposal Building – Summary of Aging Management Evaluation 3.5-85

Table 3.5.2.B-1 Structures and Component Supports NMP2 Primary Containment Structure – Summary of Aging Management Evaluation 3.5-87

Table 3.5.2.B-2 Structures and Component Supports NMP2 Reactor Building – Summary of Aging Management Evaluation 3.5-92

Table 3.5.2.B-3 Structures and Component Supports NMP2 Auxiliary Service Building – Summary of Aging Management Evaluation 3.5-98

Table 3.5.2.B-4 Structures and Component Supports NMP2 Control Room Building – Summary of Aging Management Evaluation....................3.5-99

Table 3.5.2.B-5 Structures and Component Supports NMP2 Diesel Generator Building – Summary of Aging Management Evaluation..................3.5-102

Table 3.5.2.B-6 Structures and Component Supports NMP2 Essential Yard Structures – Summary of Aging Management Evaluation 3.5-105

Table 3.5.2.B-7 Structures and Component Supports NMP2 Fuel Handling System – Summary of Aging Management Evaluation 3.5-109

Table 3.5.2.B-8 Structures and Component Supports NMP2 Main Stack – Summary of Aging Management Evaluation 3.5-111

Table 3.5.2.B-9 Structures and Component Supports NMP2 Material Handling System – Summary of Aging Management Evaluation 3.5-113

Table 3.5.2.B-10 Structures and Component Supports NMP2 Radwaste Building – Summary of Aging Management Evaluation 3.5-114

Table 3.5.2.B-11 Structures and Component Supports NMP2 Screenwell Building – Summary of Aging Management Evaluation 3.5-116

Table 3.5.2.B-12 Structures and Component Supports NMP2 Standby Gas Treatment Building – Summary of Aging Management Evaluation..3.5-120

Table 3.5.2.B-13 Structures and Component Supports NMP2 Turbine Building – Summary of Aging Management Evaluation 3.5-123

Table 3.5.2.C-1 Structures and Component Supports Component Supports – Summary of Aging Management Evaluation 3.5-126

Table 3.5.2.C-2 Structures and Component Supports Fire Stops and Seals – Summary of Aging Management Evaluation 3.5-130

Table 3.6.1 Summary of Aging Management Programs for the Electrical and I&C Systems Components Evaluated in Chapter VI of NUREG-1801..3.6-7

Table 3.6.2.C-1 Electrical and I&C Systems Cables and Connectors – Summary of Aging Management Evaluation...3.6-9

Table 3.6.2.C-2 Electrical and I&C Systems Non-Segregated/Switchyard Bus – Summary of Aging Management Evaluation 3.6-11

Table 3.6.2.C-3 Electrical and I&C Systems Containment Electrical Penetrations – Summary of Aging Management Evaluation 3.6-12

Table 3.6.2.C-4 Electrical and I&C Systems Switchyard Components – Summary of Aging Management Evaluation 3.6-13

Table 4.1-1 Time-Limited Aging Analyses Applicable to NMPNS 4.1-3

Table 4.2-1a NMP1 Weld and Plate USE Projection for 54 EFPY 4.2-5

Table 4.2-1b Equivalent Margin Analysis Plant Applicability Verification Form for NMP1 Plate (BWR/2 Plate) 4.2-6

Table 4.2-1c Equivalent Margin Analysis Plant Applicability Verification Form for NMP1 Weld (BWR/2-6 Weld) 4.2-6

Table 4.2-2a NMP2 Weld and Plate USE Projection for 54 EFPY 4.2-7

Table 4.2-2b Equivalent Margin Analysis Plant Applicability Verification Form for NMP2 Plate (BWR/3-6 Plate) 4.2-8

Table 4.2-2c Equivalent Margin Plant Applicability Verification Form for NMP2 Weld (BWR/2-6 Weld 4.2-9

Table 4.2-3 Estimated ART of NMP1 Beltline Materials at 46 EFPY 4.2-12

Table 4.2-4 Estimated ART of NMP2 Beltline Materials at 54 EFPY 4.2-13

Table 4.2-5 Information Required to Evaluate the Conditional Probability of Failure of the Limiting NMP1 RPV Circumferential Weld at 64 EFPY 4.2-16

Table 4.2-6 Information Required to Evaluate the Conditional Probability of Failure of the Limiting RPV Axial Welds for NMP1 and NMP2 at 64 EFPY 4.2-19

Table 4.3-1 Transient Monitoring Data for NMP1 ....4.3-3

Table 4.3-2 Transient Monitoring Data for NMP2 ....4.3-4

Table 4.3-3 NMP1 RPV Cumulative Usage Factors 4.3-8

Table 4.3-4 NMP2 RPV Cumulative Usage Factors 4.3-9

Table 4.3-5 NMP2 ASME Section III Class 1 Piping – CUF Bounding Location ..4.3-12

Table 4.3-6 Reactor Vessel Internals Cumulative Usage Factors 4.3-20

Table 4.3-7 NMP1 Emergency Condenser Fatigue Usage 4.3-23

Table 4.6-1 Cumulative Usage Factors for NMP1 Torus Shell 4.6-2

Table 4.6-2 Total Estimated Number of ERV Lifts 4.6-5

Table 4.6-3 Load Cycles Considered in the NMP2 Containment Liner Analysis....4.6-9

Table 4.6-4 NMP2 Penetration Fatigue Monitoring Locations 4.6-13

Table 4.6-5 Transients Considered in the NMP2 Penetration Fatigue Analysis...4.6-13

Table 4.6-6 Thermal Cycles Considered in the Penetration Fatigue Analysis......4.6-13